“AUDIT OF GASTROESOPHAGEAL JUNCTION TUMORS”

Dissertation submitted to

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M. Ch. BRANCH – VI

SURGICAL GASTROENTEROLOGY AND PROCTOLOGY

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CERTIFICATE

This is to certify that the dissertation titled **"AUDIT OF GASTROESOPHAGEAL JUNCTION TUMORS"** submitted by **DR. SREEKANTH. D** appearing for **M.Ch. Surgical Gastroenterology & Proctology** degree examination in August 2013, is a bonafide record, of work done by him under my guidance and supervision in partial fulfillment of requirement of the Tamil Nadu Dr. M. G. R. Medical University, Chennai. I forward this to the Tamil Nadu Dr. M. G. R. Medical University, Chennai.

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DECLARATION

I solemnly declare that this dissertation titled **"AUDIT OF GASTROESOPHAGEAL JUNCTION TUMORS"** was prepared by me in the department of Surgical Gastroenterology and Proctology, Centre of Excellence for Upper Gastrointestinal Surgery, Madras Medical College & Rajiv Gandhi Government General Hospital, Chennai under the guidance and supervision of **Prof.S.M.Chandramohan,** M.Ch, FACS, Professor & Head of the department of Surgical Gastroenterology and Proctology, Centre of Excellence for Upper Gastrointestinal Surgery, Madras Medical College & Rajiv Gandhi Government General Hospital, Chennai. This dissertation is submitted to the Tamil Nadu Dr. MGR Medical University, Chennai in partial fulfillment of the university requirements for the award of the degree of M.Ch Surgical Gastroenterology & Proctology.

Place: Chennai

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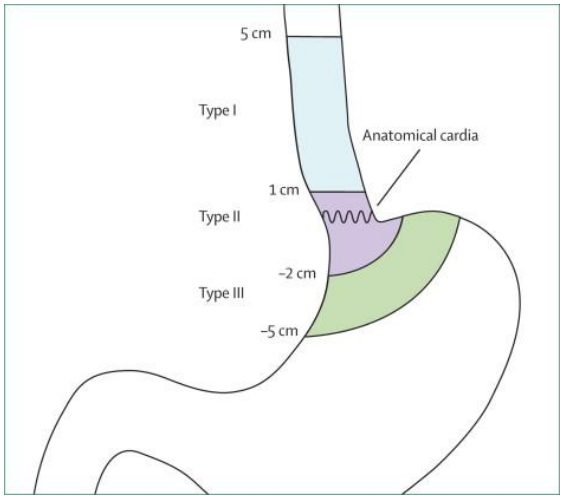
INDEX

INTRODUCTION

Gastroesophageal junction tumors are considered to be those tumors whose epicenter lies within the 5 cm range(totally-10cm) on either side of anatomic gastro-esophageal junction. A cancer in the stomach with its epicenter 5cm beyond the gastroesophageal junction aborally, and also those within 5 cm but not encroaching the gastroesophageal junction, are considered as proximal gastric cancer. Endoscopically the gastro esophageal junction is defined as the place where distal end of esophageal longitudinal vessels meet the proximal ends of gastric mucosal folds. Histological confirmation of the esophagus is needed by identifying the distal end of esophageal squamous mucosa, its multilayered epithelium and the deep esophageal sub mucosal glands or ducts . Identification of the proximal end of gastric oxyntic mucosa is also useful. In hiatus hernia the squamocolumnar junction is not a reliable marker of gastro esophageal junction. The most common tumors to arise in this area is the adenocarcinoma and the squamous cell carcinoma. This is a heterogeneous group comprising both , esophageal and gastric carcinoma and the true junctional type tumors.

There is a dramatic rise in the incidence of gastroesophageal junctional adenocarcinoma (GEJ) while its prognosis still remains poor . The possibility of offering a cure is 50% only as they present late.

- Siewert et al proposed a classification of adenocarcinomas which arise near the gastro-esophageal junction in 1996. This was accepted by the second international congress on carcinoma stomach .This was slightly modified later in 2000. The clinicopathological characteristics of each group differ and this classification help in planning treatment accordingly.



Type I

The tumor epicenter lies within 1–5 cm proximal to the gastro-oesophageal junction. These tumors behave like distal esophageal adenocarcinomas.

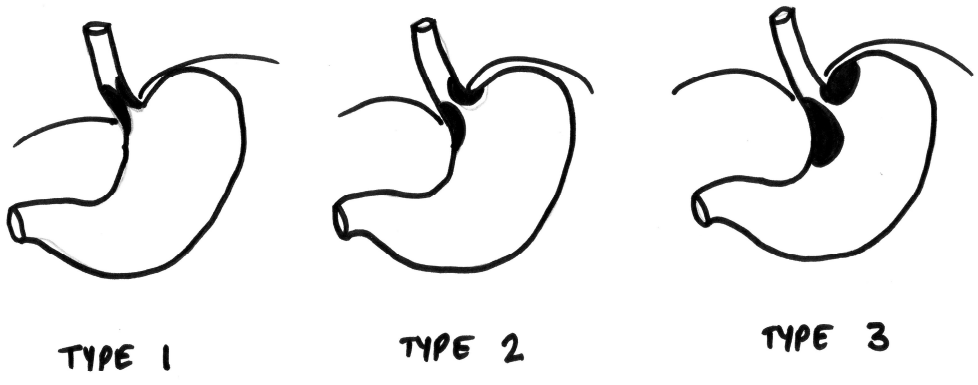
Type II

Tumor epicenter lies within 1cm above and 2cm below the gastro-oesophageal junction . Intestinal metaplasia is seen in only 10% of type II tumors. The biological behavior thus parallels the adenocarcinoma of the cardia of stomach rather than esophagus.

Type III

Subcardial tumor whose epicenter lies within 2-5cm distal to the gastro esophageal junction and involves the gastroesophageal junction.

Proximal gastric cancer not involving the gastroesophageal junction are not included in this type even though these tumors behave like gastric adenocarcinomas.



AIM OF THE STUDY

To study the epidemiology, clinical presentation, age group affected, sex ratio, resectability, type of surgical procedure, margin status, pathological type of tumors ,complications occurring post surgery including death in the patients presenting to our department (Surgical Gastroenterology and proctology) during the study period from August2010 to February 2013

Inclusion criteria

All patients with gastroesophageal junction tumors who have resectable disease by imaging and in whom surgery is planned .

Exclusion criteria

Patients with carcinoma lower third of esophagus not encroaching the anatomic gastro esophageal junction ,Carcinoma esophagus with epicenter beyond 5cm on the oral side of the anatomic gastroesophageal junction. Carcinoma arising in the cardia of stomach but not involving gastroesophageal junction and those with epicenter 5cm beyond GEJ aborally.Carcinoma of GEJ with distant metastasis identified preoperatively.

REVIEW OF LITERATURE

Adenocarcinomas of the gastroesophageal junction (GEJ) were uncommon in the early 20th century, overshadowed by the far more common distal gastric and proximal squamous esophageal cancers. Over the past 3decades this relationship has reversed with the incidences of proximal esophageal cancer and distal gastric cancers have declining significantly, while the incidences of distal esophageal and proximal gastric cancers i.e cancer around the gastroesophageal junction is increasing. The above trend is particularly marked in the Western population. Genetic, ethnic, and cultural differences between populations appear to be contributing to the burden of disease in the west. The incidence of adenocarcinoma of oesophageal in Asian people is very low , even in those who live in the United States, while these people have higher incidence of gastric cardia adenocarcinoma .

Adenocarcinomas mainly arise in the distal third esophagus and gastroesophageal junction .They arise from glandular epithelium with a papillar or tubular structure. This may be from Barrett metaplasia or from glandular metaplasia in the esophageal mucosa. Mortality associated with GE junction tumors has remained high, in spite of the technological advancement and advances in the critical care management. After surgical resection alone the 5-year survival rate is less than 30%.

Risk Factors and Etiology:

- For squamous cell carcinoma arising in the region of gastroesophageal junction there is no doubt about the cell of origin .Alcohol and tobacco consumption are the major risk factors for squamous cell carcinoma . Almost all the patients with squamous cell carcinoma except 5% have a history of smoking.The risk increases with increasing pack years.

- Cyclo oxygenase 2 is an important enzyme in the development of gastrointestinal cancers and this holds true in esophageal carcinomas also. Cox 2 acts by increasing cell life by stimulating angiogenesis and inhibiting apoptosis. So intermittent and frequent use of NSAIDS and asprin which are inhibitors of cyclooxygenase were shown to be protective against gastrointestinal tumors

- Diet and nutrition: Decreased intake of vitamin c and E is significantly associated with development of both squamous and adenocarcinoma and high fruit and vegetable intake decrease the risk for both types. Supplementation of the above has shown to decrease death rate.

- Whether a viral agent is implicated as one of the factors for mitotic transformation has yet to be elucidated.

Esophagel adenocarcinoma specific risk factors:

Barrett's esophagus:

Barrett's esophagus is the most important risk factor for esophageal adenocarcinoma. In studies with a large sample size, the risk for development of esophageal adenocarcinoma was 30- to 60-fold higher in patients with Barrett esophagus than in the general population. Most adenocarcinomas (from 20% to 80%) seem to arise from specialized columnar metaplastic epithelium .The mitotic risk increases by about 1% per year more so with intestinal metaplasia

GERD: 30 % of the people in the west are affected by GERD. There have been many epidemiological studies showing a positive association between GERD and esophageal adenocarcinomas. In a national wide Swedish study the odds ratio for having adenocarcinoma of esophagus in people with long standing and severe reflux was 43.5.

Obesity/ High BMI:

Kubo et al performed a systematic review and meta-analysis about the association of BMI and the risk of esophageal adenocarcinoma. They demonstrated that when the body mass index was more than 25,there

was an increased risk for adenocarcinoma of esophagus in both men and women and higher levels of BMI were associated with increased risk.

- Tobacco and alcohol consumption also causes Adenocarcinoma but very less when compared to a squamous cell carcinoma. Smoking is moderate risk factor for adenocarcinoma while alcohol does not seem to have an increased association.

- Dysplasia in the squamous epithelium of esophagus is not only seen before the development of invasive malignancy but also in the areas adjacent to the squamous cell carcinoma . A similar situation is seen in adenocarcinoma which shows glandular dysplasia. Intestinal metaplasia seems have the highest risk. Also, the risk of cancer increases with increasing grade of dysplasia. As of now it is not clear how a high grade dysplasia behaves because both stable disease and malignant change have been described

- Areas of frank malignancy are found in almost half of the patients with Barret's esophagus with high grade dysplasia. So most physicians consider resection a better option so that all the above patients are cured .

-

- An Inverse association is noted between GE junction adenocarcinomas and *Helicobacter pylori* infection and antioxidant intake while these factors had no convincing association with gastric adenocarcinoma.

- Numerous genetic alterations have been implicated in the carcinogenesis of gastroesophageal junction carcinomas. Often significant aneuploidy is noticed. In the evolution of esophageal carcinoma , the tumor suppressor gene P53 is affected in the initial stages itself.

- In patients with Barrett metaplasia , the occurrence of malignancy has been linked to the above derangement. Over expression of P53 precedes aneuploidy. In a study by Gomes et al differences have been noted in gene expression profiling among adenocarcinomas of oesophageal, OGJ and gastric origin.

Clinical presentation

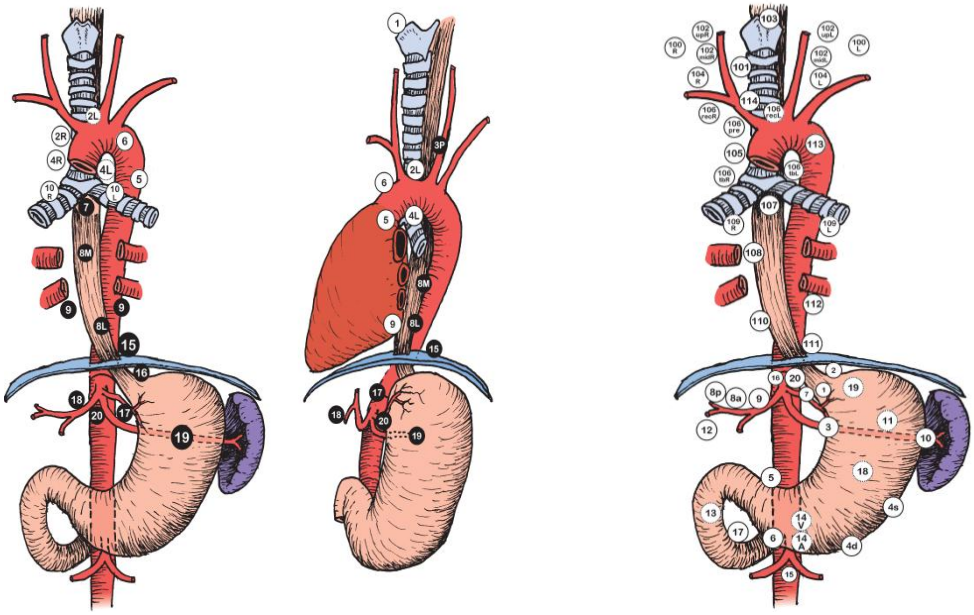
Many of the patients are known to present with dysphagia . To produce dysphagia the tumor has to narrow the esophageal lumen to less than 12mm or occupy at least two-third of the circumference. Upper abdominal pain which is usually vague along with dyspepsia may be the only symptom in some patients. So all people more than 45yrs and new onset dyspepsia should have an upper GI endoscopy done. A small percentage of tumors have odynophagia. Occasionally, patients may have respiratory symptoms like cough and dyspnea due to aspiration following obstruction. In case of locally advanced disease some patients may complain of back pain.

Examination

In early cases physical examination is usually unrewarding. When the mass is palpable transabdominally the cancer is usually inoperable. In advanced disease, one may find an enlarged supraclavicular lymphnode, pleural effusion, hepatomegaly with secondaries in the liver , ascites or pelvic deposits.

Lymph node stations:

AJCC **AJCC** **Japanese**



The lymphnode station numbers for esophageal and GE junction cancer by the Japanese is an extension of gastric cancer lymph node station there by avoiding number repetition.

STAGING:

Staging tumors in the region of gastro esophageal junction, was an area of contention in the past. But the current staging manual for cancer of esophagus also includes the gastroesophageal junction. The seventh edition AJCC staging system for esophageal cancer harmonizes cancer staging across the esophagogastric junction.

One major modification in the seventh edition of AJCC/ UICC is reclassification of N stage. The sixth edition defined regional nodes for thoracic esophageal cancer as those in the periesophageal, mediastinal, and perigastric areas (N1 disease), but cervical and celiac nodes were regarded as "distant". The N stage in th 7^{th} edition has been similar to that used in carcinoma stomach in which the number of nodes determine the stage rather than the location of the node .Thus tumors across the gastroesophageal junction are uniformly grouped.

In the current system, the site of origin of the tumor, the grade of tumor and histologic type was considered to affect the prognosis in early stages only.

The subdivisions in the M stage which was previously present have been removed and only the presence or absence of distant metastasis was noted.

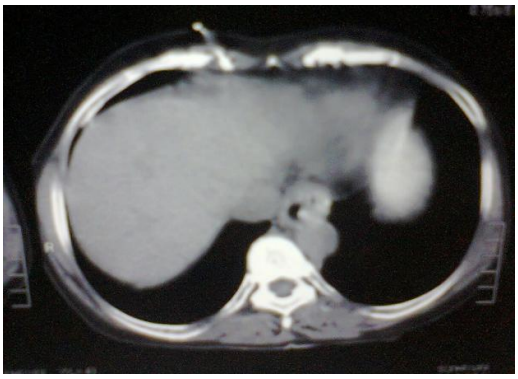
Investigation

BARIUM CONTRAST STUDY

Barium upper GI contrast study contrast study shows mucosal irregularity and shouldering, proximal dilatation and luminal narrowing. It helps in assessing the longitudinal extent of growth on the esophageal side

BARIUM SWALLOW

CECT ABDOMEN



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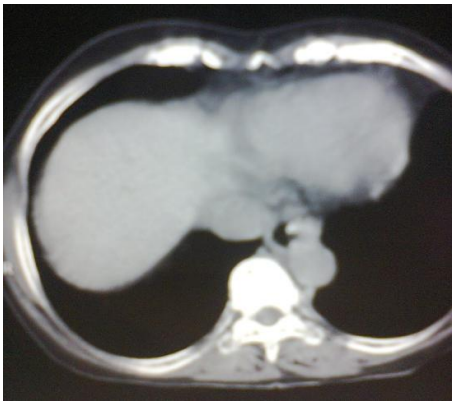

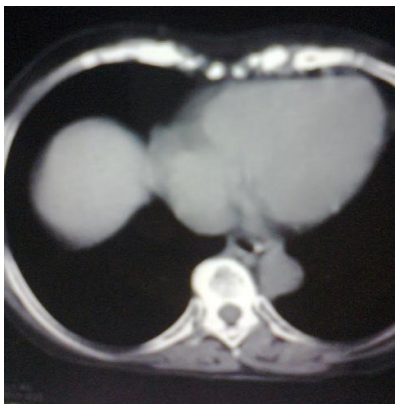

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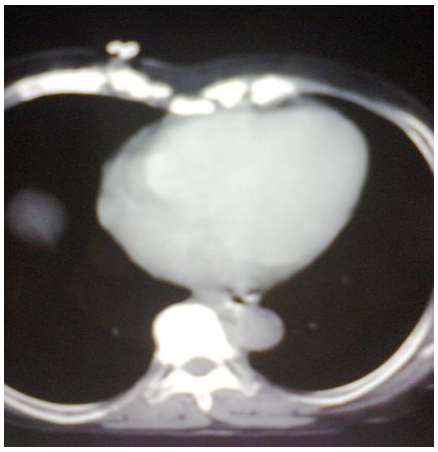

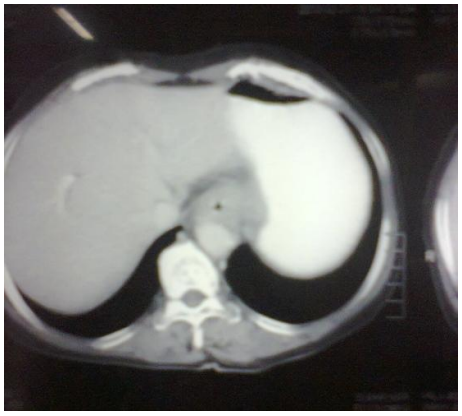

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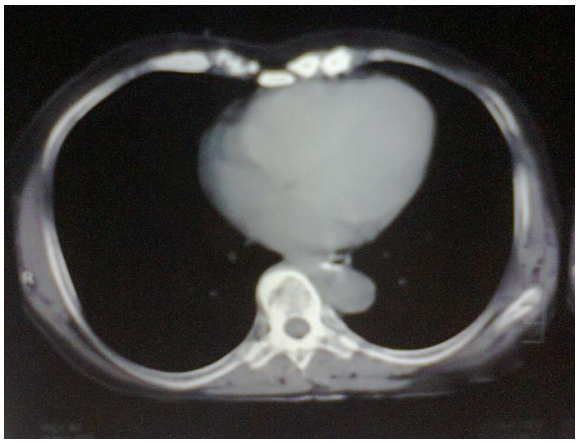


and along the lesser and cardia of stomach. Presence of the entire lesion below the diaphragm helps in surgical decision making. Streaking of barium outside the esophageal lumen in an asymptomatic patient indicates contained perforation which may be spontaneous or iatrogenic due to previous endoscopic procedure. In cases with extension into the middle third of esophagus, it helps to know the relation of tumor to the mediastinal structures like trachea and bronchi .Signs like tortuosity, angulation, axis deviation from midline, sinus formation and fistula formation with the bronchial tree indicates that the tumor has crossed the adventitia and involved the neighboring structures.

ENDOSCOPIC EXAMINATION

Upper gastrointestinal endoscopy and biopsy is the primary modality used for diagnosing gastroesophageal junction tumor .It helps in assessing the mucosal extent of disease-vertical and circumferential ,degree of involvement of stomach in the cardiac region and on the lesser curve side. The presence of satellite lesions are also noted which helps in planning the extent of esophageal resection and proximal margin. It however misjudges the vertical extent of tumor in a case of submucosal extension of tumor.

Based on endoscopic examination superficial tumors are classified as

Type 0 to 1:superficial and protruding

Type 0 to II:superficial and flat

Type 0 to III:superficial and distinctly depressed

Based on this endoscopy advanced tumors are classified as

Type 1 :localized protruding

Type 2:ulcerative and localised

Type3:ulcerative and infiltrative

Type 4: diffusely infiltrative

Type 5:miscellaneous

BRONCOSCOPY

Broncho scopy is done to see the involvement of the tracheobronchial tree by the tumor particularly by the tumors of upper and middle portions of the esophagus and is usually not required in a GE junction tumor unless the middle third of esophagus is involved contiguously. Widened carina ,external compression, tumor infiltration and fistulization are the sings of involvement of trachea bronchial tree.

Tumor infiltration and fistulization are the contraindications for resection. Biopsy and brush cytology are also done in suspicious cases

ULTRASOUND ABDOMEN

In cases of adenocarcinoma of the GE junction as there is a high possibility of advanced disease , ultrasound abdomen helps in detecting liver metastasis , ascites and extensive abdominal lymphadenopathy, thus obviating the need for further investigation by expensive modalities.

CT SCAN

CT scan is done for most patients with GE junction tumors . It helps in detecting distant metastasis. It also helps in evaluating the local extent of disease. Thickening of esophageal wall of more than 5 mm is abnormal . The anatomical details that a surgeon needs before surgery can be well delineated in a good quality CT of the chest and CT of the abdomen.The CT has to be done with the contrast given intravenously as well as by oral route. Loss of fat plane between the esophagus and the aorta, trachea and bronchi and the pericardium is suggestive of invasion, but absence of fat in a thin patient makes this criteria unreliable. The accuracy of CT for aortic infiltration is 80%when the area of contact between aorta and esophagus is more than 90 degrees of circumference of aorta. The

sensitivity in diagnosing T4 disease was 25% . The specificity in diagnosing T4 disease was 94% .A multislice CECT with coronal and sagittal reconstruction may dispel the need for a barium swallow by providing similar information.

LAPAROSCOPY

Laparoscopy is the best modality in detecting peritoneal disease. Therefore before proceeding with laparotomy, a staging laparoscopy is to be done especially in a case of adenocarcinoma of gastroesophageal junction. It avoids noncurative laparotomy in 11%–48% of patients.

PET and PET-CT:

PET-CT is the most accurate noninvasive modality for detecting M1 disease .In as study by Roedl et al, PET-CT was shown to be more accurate than PET in characterizing the distant metastatic sites of gastroesophageal junction carcinomas. On combining the visual interpretation with tumor volume measurements, the PET-CT has a sensitivity of 96% . The specificity of PET-CT is 94% . PET-CT helps in detecting the response to neo adjuvant therapy

ENDOSCOPIC ULTRASOUND

EUS forms an important modality of evaluation for assessing the local extent of the disease. EUS is generally performed after staging CT, which may detect distant metastases or direct the EUS to specific abnormalities needing clarification. The accuracy of staging with radial and linear echo endoscopes is equivalent and either type of instrument is suitable for staging. Details of metastases like involvement of right and left lobe of liver or left adrenal can be noted . FNAC or biopsy could be performed as required . It also helps in identifying longitudinal sub mucosal spread not visible at upper GI endoscopy. The upper and lower margin of the tumor from incisor teeth and aortic arch is noted. The distance of the upper or lower edge of tumor from gastro esophageal junction and whether the gastroesophageal junction is involved is noted.

Accuracy for T & N stage is approximately 80-85% and 60-70% respectively. T1m (mucosal), T1sm (sub mucosal)

T2 - For type 3 junctional tumors T2a = breaches muscularis propria;

T2b = breaches subserosa.

T3 (minimal – i.e. tumour just breaches muscularis propria, 4th layer)

(bulky – i.e. extensive invasion of muscularis propria but not T4)

T4a - Involvement of pleura, diaphragmatic crura, pericardium,

T4b- Involvement of , , aorta, bronchus, carina, trachea or other irresectable structures.

- Involved nodes may be recognized by established EUS criteria (size > 1cm, hypo echoic, well demarcated and round) – if all 4 criteria are present the probability of malignancy is around 80%.In staging lymph node ,the total number of lymph nodes identified, location of nodes and whether FNAC was performed is noted.

Major complication rate for staging EUS with or without FNA (bleeding, perforation, infection) is usually less than 1%. FNA samples have diagnostically adequate cellularity in about 90%. There are echo endoscope that can traverse tight strictures and dilatation of a tumor for EUS is not advisable .If dilatation is planned, it is to be first discussed with the the surgeon who is likely to be undertaking surgery in case perforation occurs and emergency surgery is required. Presence of full thickness tumor below diaphragm is noted as it helps in planning appropriate surgery.

Treatment

SURGERY

For these patients who are surgically fit and in whom distant metastasis has been ruled out , resection is the main modality of treatment. Long term survival in these patients is dependent on Ro resection status as well as the T and N stage. As these tumors spread submucosally planning the longitudinal extent of resection is considered to be problematic. Involvement of vital adjacent organs like the aorta make these tumors irresectable.

Access:

Since the Gastroesophageal junction tumor is located at the crossroads of abdominal and thoracic cavities, may be accessed from either ways or by using both of them. It also depends on where the bulk of tumor lies in relation to diaphragm.The various options are listed below

Abdominal-In most tumors the bulk of it lies on the abdominal side as in the case of siewert type 3, making this approach the commonest one used. A total gastrectomy which is the procedure of choice for both siewert type 3 and most siewert type 2 cancers is comfortably done from the abdominal side by either a midline or using a bilateral subcoastal incision.

Also most Gastrointestinal surgeons are comfortable operating from the abdominal side. Even for Total or subtotal esophagectomy as in a case of siewert type I tumor or Squamous cell carcinoma of the lower end of the esophagus, a transhiatal esophagectomy would avoid a thoracotomy and its sequelae.

Thoracic approach- Trans-thoracic esophagectomy (TTE) can be done by the classical Ivor lewis method involving right thoracotomy.

A limited distal esophagectomy with proximal or total gastrectomy can be done by a thoracoabdominal incision on the left side.

TYPE AND EXTENT OF SURGERY

- Siewert Type I tumors

- requires Esophagectomy similar to that of squamous cell carcinoma.

What ever may be the approach. transthoracic or transhiatal the lower mediastinal lymphnodes have to be removed.

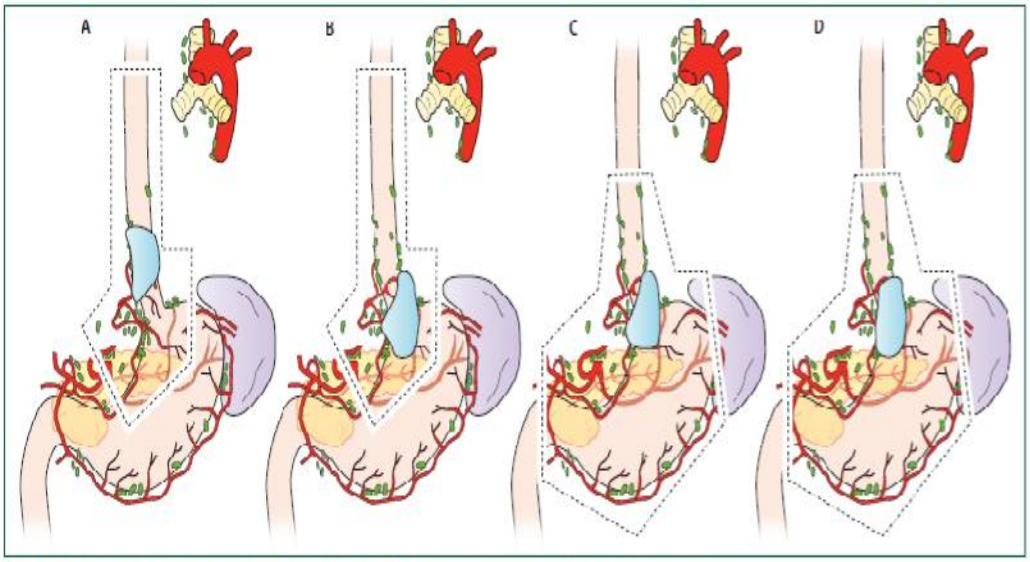


Figure 4: Schematic representation of recommended extent of surgical resection for oesophagogastric junction adenocarcinomas
Type I (A; subtotal oesophagectomy with superior polar gastrectomy), type II (subtotal oesophagectomy with superior polar gastrectomy [B] or total gastrectomy with inferior oesophagectomy [C]), and type III (D; total gastrectomy). Blue region is tumour site.

For Siewert Type 2 tumor the options include

- Left thoracoabdominal approach ,
- Proximal gastrectomy + Subtotal esophagectomy (Laparoscopy/VATS) ,
- Total gastrectomy with transhiatal distal esophagectomy
- Right Ivor lewis approach and using either the stomach or the jejunum for restoring intestinal continuity .

Patient factors such as pulmonary function, body habitus and prior surgery are important in selecting the appropriate surgical approach. Each approach has its advantages and disadvantages and no single option has demonstrated a clear survival benefit over the others provided that an

adequate lymphadenectomy has been done and adequate margins are obtained . Bile reflux esophagitis can be a difficult problem to manage if reconstruction includes an intrathoracic esophagogastrostomy, while complex reconstructions with colon or jejunal interpositions carries an even higher morbidity rate. Hence most surgeons attempt to place the esophagogastric anastomosis in either the abdomen or neck and use the gastric remnant as the conduit of choice .

To ensure clear margins, intraoperative frozen sections should be used liberally . But, even frozen section can lead to false-negative results. In a study by Ito et al., a recommendation was made to achieve a gross proximal resection margin length of at least 6 cm and a distal resection margin length of at least 4 cm, regardless of tumor location. There are two caveats: first, that the degree of mural extension by gastric cardia adenocarcinomas is strongly correlated with T stage, and second, that margin lengths reported in their study were measured on prefixed fresh specimens immediately after resection. Therefore , intraoperative decisions should be made based on margin length requirements that may need to be significantly greater than those derived from postresection specimens which is more pertinent to T3 and T4 tumors .

LYMPHADENECTOMY.

Lymph nodes in the lower mediastinum are involved in up to 40% of cases of siewert type 1 adenocarcinoma and in 2.5% of cases of siewert type 2 adenocarcinoma. However, the majority of positive nodes associated with Siewert type II and III cancers involve the left gastric, lesser curve and paracardial nodes , which are included in both abdominal and thoracic approaches and the incidence of lymph node positivity is not influenced by the surgical approach. Theoretically, D2 dissection , have the advantage of removing the entire lymph node basin thereby decreasing the rate of local recurrence.

- Only patients with pN0 and pN1 have the chance for cure
- Even though the superiority of extensive lymphadenectomy has not been proven , it provides a more accurate pathologic staging.

Most patients usually succumb to a distant metastasis at some point of time. The recurrence in the lymphnode stations located in the para aortic region which are not removed in a D2 dissection.

PERFORATION

Iatrogenic perforation of cancer of the gastroesophageal (GE) junction is a potentially life-threatening complication. Its incidence has

increased most likely because of more aggressive palliative endoscopic therapy, and the current widespread use of endoscopic ultrasound (EUS) for accurate preoperative staging. Irrespective of the treatment, iatrogenic (or spontaneous) perforation of the tumor dramatically decreases long-term survival. Therapy should therefore focus on the immediate and efficient control of the perforation (such as drainage, stenting or resection), and on a satisfactory quality of life rather than on oncologically adequate treatment. The approach of conservative versus surgical therapy in cases of iatrogenic perforation has shifted more towards conservative therapy, together with the development of novel endoscopic stenting possibilities. However, under certain conditions, the conservative approach is not feasible; e.g., the perforation is too extensive for adequate stent therapy, or, if the tumor is (subtotal) stenosing, making successful stent therapy exceedingly difficult in which case a limited resection of GE junction and esophagogastric anastomosis could be attempted in selective cases. Other indications for a surgical approach include extensive peritonitis or mediastinitis that cannot be drained adequately by interventional drainage placement. There are two large studies addressing this issue have favored a conservative approach . Di Franco et al have examined 48 patients with iatrogenic perforation of esophageal cancer. Sixteen patients were treated by oncological esophagectomy, and 32 were treated conservatively

because of advanced disease in 17 and poor performance status in 15. They demonstrated that all patients in the resection group died of recurrent disease and more than half of them died within the first year after surgery. There was no significant difference in the survival between the resected and non-resected group of patients. In an another study, Jethwa et al have analyzed 83 iatrogenic perforations during diagnostic endoscopy, of which, 27 were managed by surgery. The median survival in the whole cohort was 72 d. There was a trend for longer survival in patients undergoing surgery. However, the high 30-d mortality of nearly 40% and the poor survival in the surgical and non-surgical group shows that even rapid surgical treatment often fails to change the natural course of the disease at this stage.

Neoadjuvant chemotherapy/chemoradiotherapy:

The relatively small randomized trial from Ireland comparing preoperative chemoradiotherapy (cisplatin and 5-FU) reported a significant improvement in overall survival at 3 years, and a decrease in regional node involvement at the time of surgery. However, this study has been criticized for the relatively short duration of median follow-up (10 months) and the unexpectedly low overall survival in the surgery alone arm.

In a meta-analysis of 11 RCT's by Kaklamanos et al. an improvement in the 2-year survival compared with surgery alone was noted. An absolute difference in the survival of 6.3% was noted when the four most recent studies were analyzed. Treatment-related mortality did increase by 1.7% for patients with Neoadjuvant chemotherapy and 3.4% for patients with Neo Adjuvant chemoradiotherapy .

Recent studies verifying the role of neoadjuvant chemoradiotherapy have shown a survival advantage for adenocarcinoma rather than a squamous cell carcinoma of the esophagus .

- The ISDE/IGCA consensus conference recommended that neoadjuvant therapy be restricted to patients with locally advanced tumors of the esophagogastric junction where an R_0resection is questionable.

Adjuvant chemotherapy and chemoradiotherapy

As these patients have high rate of systemic failure ,all the node positive patients post R0 resection are subjected to adjuvant therapy. The US GI Intergroup trial (INT 0116) has provided the best data to date in support of adjuvant chemoradiotherapy. Postoperative chemoradiotherapy improved overall survival by 9% at 3 years and nearly 20% at 7 years..The conclusion in the intergroup trail was that postoperative chemoradiotherapy is slowly emerging as the standard of care in treating gastric cancer and GE junction cancers and future areas of research were needed to evaluate new chemotherapeutic agents and improved modalities of radiation delivery and identify molecular markers that may indicate patients who are more likely to benefit from adjuvant therapy .

Multimodality therapy

Optimal treatment of these tumors using multiple modalities has yet to be established by prospective, randomized control trials. Siewert's classification has been used to evaluate the pattern of lymphatic spread and evaluate outcomes after surgery. Apisarnthanarax and Tepper used the Siewert classification system to review randomized controlled trials of esophageal and gastric cancers. There were nine studies of esophageal and/or gastric cancer that included patients with a diagnosis of GEJ

tumors. The studies were considered most relevant if the trials included only patients with adenocarcinomas.

Only five of the nine studies included information on the number of patients with GE junction tumors. Among these, the authors concluded that only three were most relevant to the management of GE junction tumors; namely, the United Kingdom Medical Research Council MAGIC trial, the US Gastrointestinal Intergroup INT 0116 trial and a trial from Ireland of multimodal therapy and surgery for esophageal cancer. MAGIC trial involved the study of perioperative chemotherapy with ECF (5-fluorouracil [5-FU],epirubicin, cisplatin,) vs surgery alone for cancers of the stomach, gastroesophageal junction and lower esophagus. GE junction tumors comprised 12% of these tumors. They reported an overall increase in 5-year survival from 23% to 36% with perioperative chemotherapy compared with surgery alone. The rate of distant metastasis reduced from 37% to 24% with chemotherapy, while the curative resection rates were not improved. Patients with GE junction cancers rather than lower esophageal adenocarcinomas appeared to derive the most benefit in the subgroup analyses, based on hazard ratios. A significancant improvement in survival favoring multimodal therapy was reached at 3 years in the inter group trail.

TARGETED THERAPY

While recommendations regarding the use of targeted therapies in the management of GE junction carcinomas await the completion of randomized trials, there is good reason to remain optimistic based on the recently reported phase II studies . Bevacizumab is a humanized monoclonal antibody targeting (VEGF)vascular endothelial growth factor . Bevacizumab binds VEGF which is a potent stimulator of angiogenesis that is often expressed in many solid tumors and blocks it from binding to its receptor located on endothelial cells. Bevacizumab was well tolerated in the phase II studies and was not associated with increased treatment related toxicities . *I*n two studies, the response rates was more than 60%. Epidermal growth factor receptor (EGFR) activity inhibitors are also widely employed in cancer treatment. EGFR activity is frequently increased in many cancers, including GE junction , promoting cell survival, tumor cell growth and proliferation. Therapies directed at inhibiting EGFR activity include antibodies that block ligand binding (cetuximab) as well as small-molecule inhibitors of the EGFR tyrosine kinase domain (gefitinib and erlotinib, among others).In phase II studies ,toxicities associated with these drugs were no different from those observed in other trials. Some modest efficacy was observed whether used as single agents or in combination with other chemotherapeutic drugs.

Multimodality treatment using a combination of surgery, chemotherapeutic agents, radiotherapy and biologic therapies appear to be promising .

MATERIALS AND METHODS

All the patients presenting to our department(surgical gastroenterology) at Rajiv Gandhi Government General hospital from august 2010 to February2013 with gastroesophageal junction tumors or those presenting with dysphagia and regurgitation and on evaluation by upper gastrointestinal endoscopy and imaging studies, found to have gastroesophageal junction tumors and distant metastasis ruled out by a CECT were studied.

Age, gender, chief complaints, co-morbid illness, nature of diet, personal habits like smoking and alcohol consumption were noted. Complete physical examination findings of the patients like presence or absence of jaundice, pallor, pedal edema and bilateral supraclavicular lymphadenopathy if any were noted. Abdominal examination was done to look for any palpable mass, hepatomegaly and free fluid. Rectal examination was done in all patients to rule out pelvic deposits. Lab investigations including a complete hemogram, liver function tests and renal function tests were done.

Coagulation profile was also done. Diagnosis was established by an upper GI endoscopy and biopsy. After distant metastasis was ruled out by

chest X-ray and ultrasonogram of abdomen , contrast enhanced computerised tomography of chest and abdomen was done for all patients.

Endoscopic ultrasound and PET were not done in any of our patients . If the patients are suspected to have advanced disease , staging laparoscopy was done . Eighty one patients with gastroesophageal junction tumors were included in the study . Consent was obtained from all the patients explaining the nature of illness ,the possibility of finding a distant metastasis, the various modalities of treatment and their efficacy , the morbidity and mortality associated with the disease and the surgical procedure. The performance status of the patient was assessed and the cardiorespiratory status evaluated. Hydration status, nutritional status and coagulation profile were noted and corrected in case of derangement. All patients were encouraged to have incentive spirometry before surgery.

For patients with, poor performance status i.e ECOG-4 and severe malnourishment, a nasogastric tube was passed , if the lesion has not caused complete obstruction for improving the nutrional status. The type of surgery was planned based on the histopathological report, the location and extent of disease. Staging laparoscopy was done in all cases of carcinoma of gastroesophagel junction before proceeding with definitive surgery.

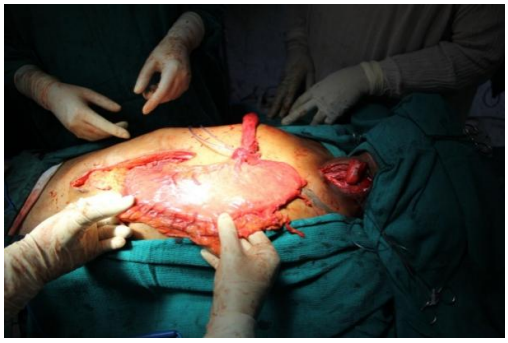
During the definitive surgery, the abdomen is opened by a midline incision and operability is ascertained once again before resection is proceeded with.

For all cases of squamous cell carcinoma involving GE junction and Siewert type 1 adenocarcinoma ,transhiatal esophagectomy(THE) was done .As our department's protocol is to do a transhiatal esophagectomy for all lower third esophageal carcinomas ,the above group including Siewert type1 adenocarcinoma were treated by THE which also include the removal of lower mediastinal lymphnodes transhiatally undervision after widening of the hiatus.

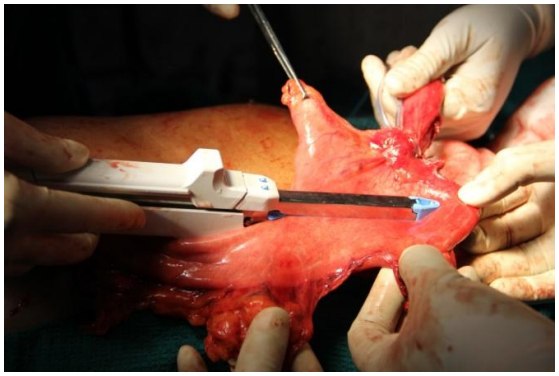
Following THE reconstruction was done using a stomach tube created along the greater curvature based on right gastroepiploic pedicle by stapling along the lesser curve side. The neck is opened by a left oblique incision along the anterior border of sternomastoid and the esophagus is mobilized. Retractors are not applied on the medial aspect of neck wound thereby avoiding injury to the recurrent laryngeal nerve.

Esophagogastric anastomosis was done in the neck by either a completely handsewn technique or by a stapler .

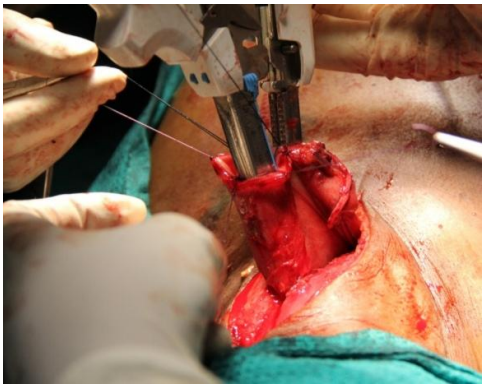
TRANS HIATAL ESOPHAGECTOMY SPECIMEN



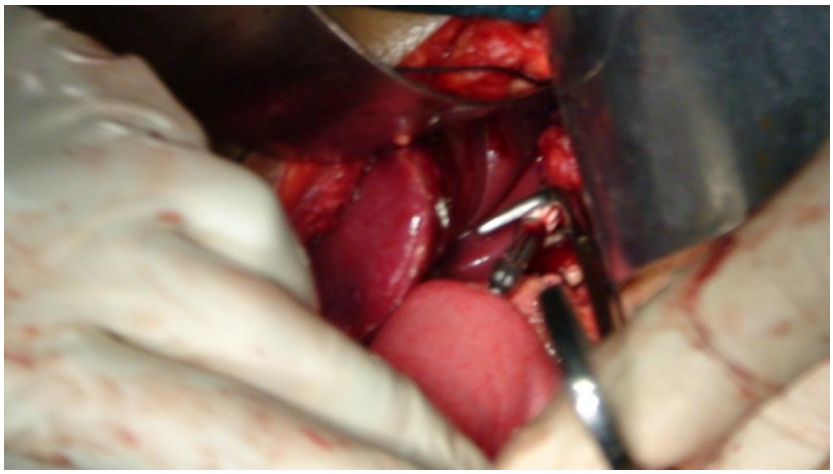
PREPARING STOMACH TUBE



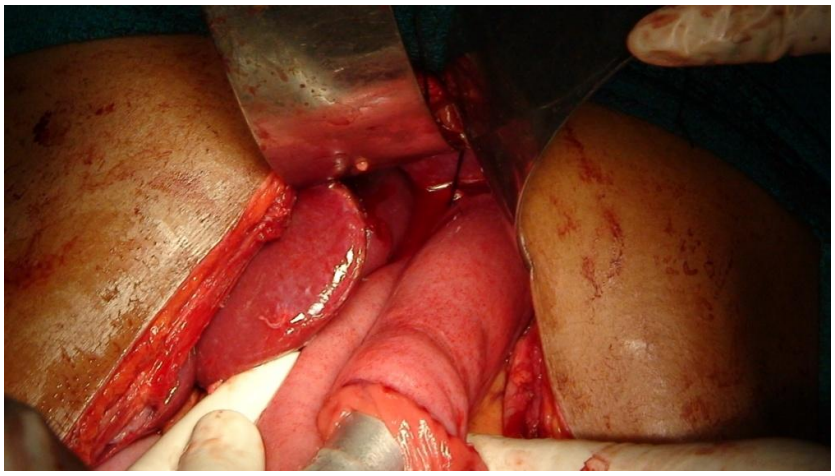
NECK ANASTOMOSIS



ESOPHAGOJEJUNAL ANASTOMOSIS FOLLOWING TOTAL GASTRECTOMY



STAPLED ANASTOMOSIS USING CIRCULAR STAPLER



In the partial stapling technique , linear cutter was used for creating the posterior esophagogastric conduit anastomosis, while the stapler rent anteriorly was closed by a handsewn technique(stapled side to side esophagogastric conduit anastomosis). The above could also be done as a totally stapled technique by firing another stapler to close the anterior anastomotic rent similar to the double stapled technique used to create a small bowel anastomosis . Alternatively a circular stapler no.25 was used in some cases to perform the esophagogastric conduit anastomosis in the neck.

For Siewert type 2 tumors , a total gastrectomy with D2 lymphnode dissection+ transhiatal resection of the distal esophagus with adequate margin was done.

For Siewert type 3 tumors , a total gastrectomy with D2 lymphnode dissection was done. The duodenal stump in case of total gastrectomy was secured using a stapler usually a linear cutter(TLC-55). The esophagojejunal anastomosis was done in a end to side fashion either by using a circular stapler or by a hand sewn technique.

In all the patients post resectional surgery, a feeding jejunostomy was done by modified witzel technique using a no.12/no.14F suction catheter. Broad based fixation of the tube to the abdominal wall was done.

The feeding jejunostomy not only helped in starting early enteral nutrition in the post operative period but also provided enteral feeding access for patients with a leak.

Intra operatively ,the duration of surgery, blood loss, blood transfusion, the technique of anastomosis -whether a linear or circular stapler was used or whether it was a done by a completely handsewn technique was noted.

Post operatively ,the need for ventilator support, the day of extubation, the day of removal of nasogastric tube, drainage tube and whether an intercoastal chest drainage tube was inserted was noted.

All the patients had their epidural catheter removed on the 2nd post operative day. The urinary catheter was removed on the third postoperative day unless the patients required intensive monitoring. The integrity of the anastomosis was checked by a gastrograffin study on the 7th postoperative day.

A chest X-ray was taken on the day of surgery post operatively to look for the presence of adequate lung expansion in patients who underwent THE and ICD insertion and in cases where pleural breach was suspected intra operatively.

The length of postoperative stay was noted along with major complications like anastomotic leak, intra-abdominal collection and other minor complications like wound infection, respiratory complications, and urinary tract infection. All the complications after the operative procedure including mortality were noted .

Anastomotic leak

Neck

Drainage of significant amount of pus followed by saliva or drainage of orally ingested substance or demonstration of contrast extravasation on contrast study is noted as anastomotic leak in the neck

Adbominal

Drainage of bilious fluid or intestinal contents through the abdominal drain or through the abdominal wound or a significant intra abdominal collection of pus or intestinal contents or leak requiring radiological or surgical intervention is noted as intra abdominal anastomotic leak.

Intra-abdominal collection

Any collection detected by ultrasonogram or CECT of more than 5 cm is noted as intra abdominal collection and planned for percutaneous aspiration followed by drainage if necessary.

Haemorrhage

Bleeding complication following surgery requiring monitoring, transfusion, radiological and surgical intervention were noted.

Wound infection

Collection of fluid or pus at the operative site with erythematous wound edges with or without fever, leucocytosis and in the absence of any major complications is noted as wound infection. It was managed by letting out the pus or fluid, sending it for culture and sensitivity treating with appropriate antibiotics.

Respiratory complications

Most patients have epidural analgesia which helps in early ambulation and aggressive pulmonary toileting with chest physiotherapy .All these patient are encouraged to do respiratory exercises with triflow incentive spirometry. All post-operative patients with fever and diminished air entry or other lung signs are noted to have respiratory complication.

Urinary Tract Infection

Patients with burning micturition with fever and positive urinary culture and no other identifiable source are noted to have urinary tract infection. They are treated with hydration and antibiotics.

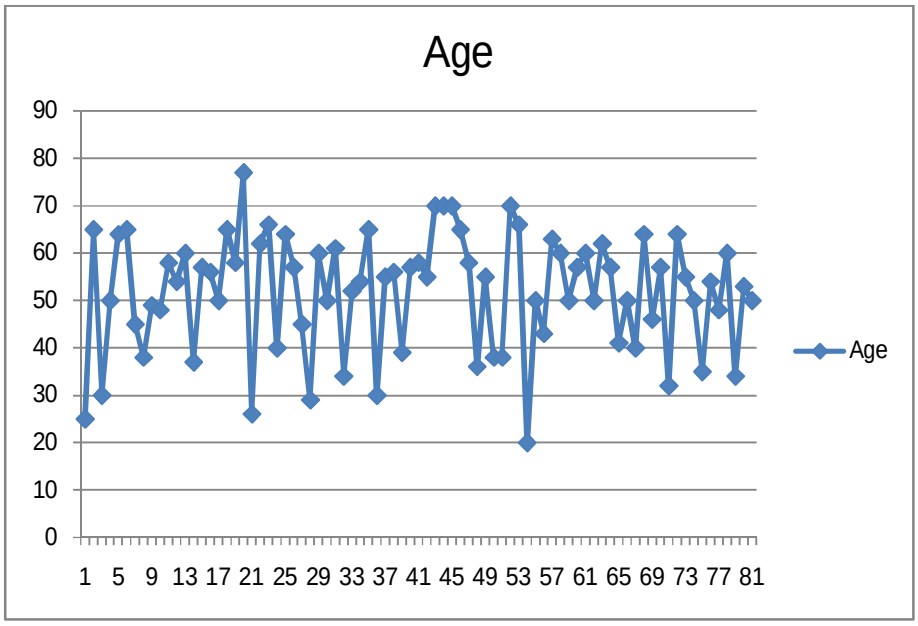
RESULTS

Of all the patients with gastroesophageal junction tumors, those patients who were found to have distant metastasis or locally advanced disease by imaging were referred to palliative chemotherapy, chemoradiotherapy or palliative supportive care and were excluded from the study. Also patients with proximal gastric cancer within 5cm of gastroesophageal junction but not involving the gastroesophageal junction and those with esophageal carcinoma 5cm proximal to gastroesophageal junction and those not involving the gastroesophageal junction were excluded from the study. 81 patients who had resectable disease on imaging in whom surgery was planned were studied.

STATISTICAL ANALYSIS:

The data collected in the proforma were entered in an excel sheet of Microsoft Office software and inference obtained after statistical analysis. The mean and standard deviation and proportions were computed where ever necessary.

The age of affected patients ranged from 20- 77yrs.The median age was 55yrs while the mean age was 51.9 yrs with a standard deviation of 12.26.



From the above chart it is evident that most of patients are between 40-65yrs.Of the total 81 patients studied , there were 51 males and 30 females. The males were 1.7 times more commonly involved than females amounting to63% of total cases.

Symptoms:

33(40.7%) patients had upper abdomen pain ,while dysphagia was the commonest symptom present in 64(79%) patients. Hemetemesis was present in 7 (8.6%)patients and malena was present in 9 (11.1%)patients.

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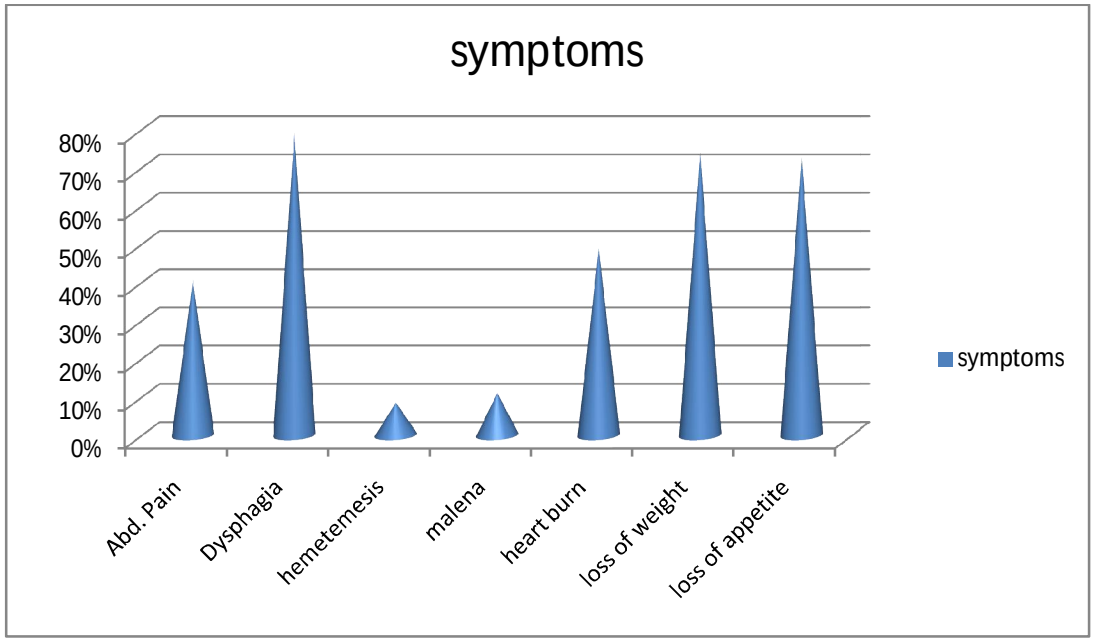


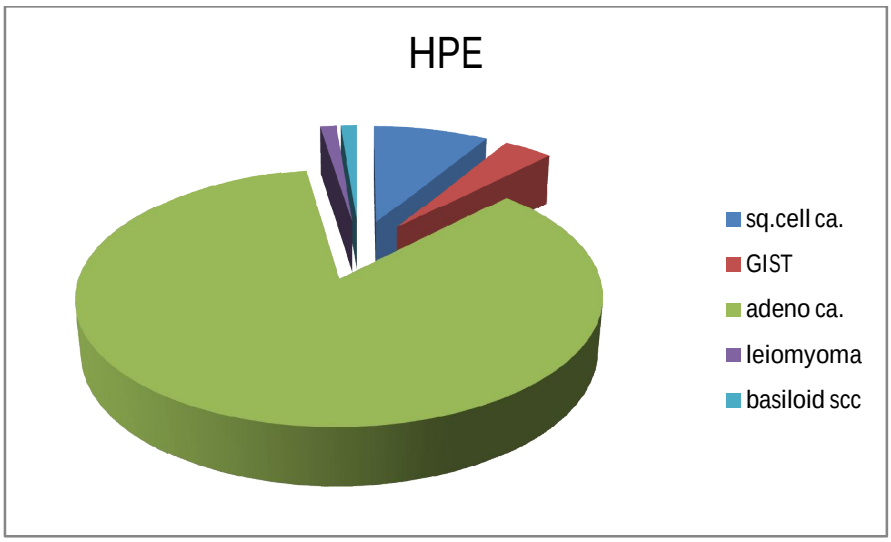
History of heart burn was present in 40(49%)patients. Loss of weight was present in 60 (74%) while loss of appetite in 59(72.8%) patients .The patient with leiomyoma was completely asymptomatic and the tumor was detected incidentally during a routine checkup that was mandatory before joining a institution for academic studies.

Hypertension was present in 11patientsand diabetes was present in 8 patients.3 patients had coronary artery disease while 18 patients had COPD.

Co-morbidities	
Hypertension	11(13.5%)
Diabetes	8(9.8%)
Coronary arterydisease	4(4.9%)
Bronchial asthma	1(1.2%)

46 patients(56.8%) had association with cigarette smoking and 35patients(43.2%)had association with alcohol abuse while tobacco chewing was associated with 28patients(34.5%) . Only 3patients were vegetarians while the remaining 78 were non-vegetarians

The most common histopathological diagnosis was adeno-carcinoma found in 69(85.2%)patients, followed by squamous cell carcinoma in 7(8.6%)patients. Gastro intestinal stromal tumor was seen in 3(3.7%)patients , basiloid squamous cell carcinoma in 1 patient and leiomyoma in 1patient.



Of the 69 patients with adenocarcinoma , the distribution among siewert classification is as follows. Siewert type 1 adenocarcinoma was found in 5 patients while siewert type 2 adenocarcinoma was found in 27 patients and siewert type 3 adenocarcinoma was found in 37 patients.

siewert type 1	5(7.2%)
siewert type 2	27(39.1%)
siewert type 3	37(53.6%)

Grade of differentiation

In the study group, excluding the 3 patients with GIST and 1patient with leiomyoma ,20(25.9%)patients had well differentiated tumor , while 32(41.5%)patients had moderately differentiated tumor and 25(32.4%)patients had poorly differentiated tumor.

DIFFERENTIATION	
Well differentiated	20(25.9%)
Moderately differentiated	32(41.5%)
Poorly differentiated	25(32.4%)

3 patients with GIST and 1patient with leiomyoma had an exophytic growth. The gross appearance of the remaining tumors was protruding type in 36(46.7%)patients , while in 23(29.8%)patients it was an ulcerative lesion and in 18(23.3%)patients , it was infiltrative in nature.

GROSS APPEARANCE	
Protruding type	36(46.7%)
Ulcerative	23(29.8%)
Infiltrative	18(23.3%%)

Curative surgery

45patients (55.5%) were operable and underwent resectional surgery while 36patients(44.5%) underwent palliative treatment. Of the patients who underwent resectional surgery, the variables are summarized below. The day of ryle's tube removal , drain removal and oral intake was noted .

	Minimum	**Maximum**	**Mean**	**Standard deviation**
Age(yrs)	20	77	50.6	12.6
Hb(g%)	6	13	8.86	1.26
Albumin(g/ml)	2.5	4.2	3.3	0.3
Duration of surgery(min)	160	410	254.4	60.8
Blood loss(ml)	100	520	216	87.2
Ryle's tube removal	6	22	7.92	2.21
Drain removal	3	22	7.7	2.95
Oral intake	6	20	7.97	2.56

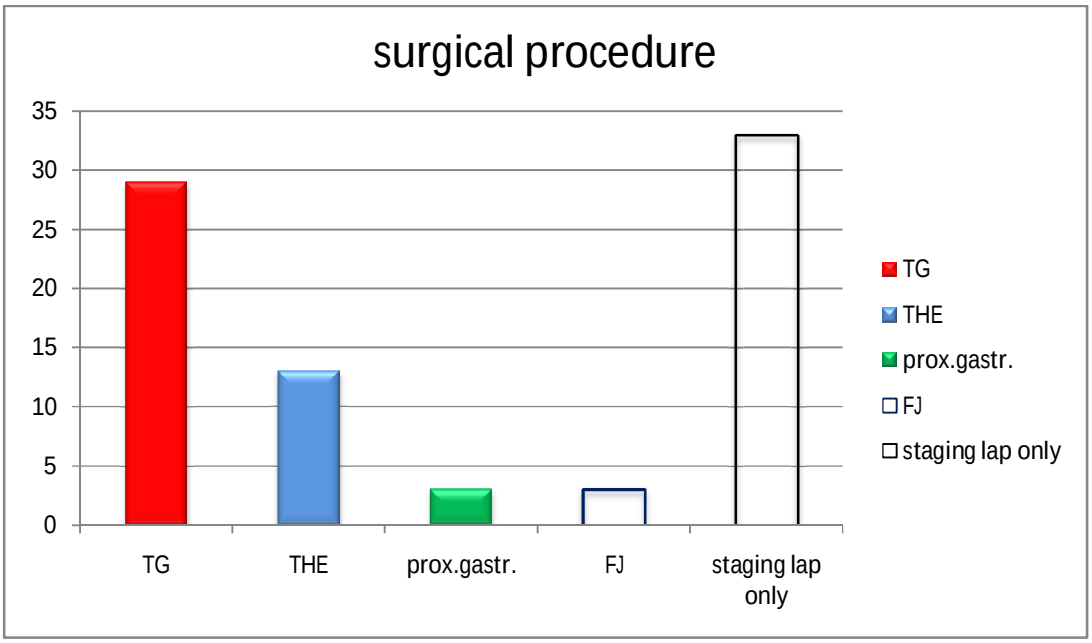
The average age of the patient undergoing resectional surgery is 50.6yrs.The mean haemoglobin and albumin values were 8.8g% and 3.3g% respectively. The average duration of surgery was 254 minutes while that of blood loss was 216ml.The time of removal of the ryle's tube, drain tube and oral intake is around the 8^{th} postoperative day.

Among the patients who underwent resectional surgery,11(24.4%) patients had wound infection while 6(13.3%) patients had respiratory complications.

The average post operative stay was 9.58 days in all patients, with a standard deviation of 4.58.The feeding jejunostomy done in resected cases was retained until the completion of chemotherapy and in 3patients who had their feeding jejunostomy during trial dissection for unresectable tumor was retained for feeding access.

Totally 45 patients underwent surgical resection with a curative intent in which 29 patients underwent total gastrectomy while 13 patients had Transhiatal esophagectomy, 2patients had proximal gastrectomy and one patient had proximal gastrectomy+distal esophagectomy . 3 patients underwent feeding jejunostomy for feeding access after they were found to be irresectable by trial dissection. All these patient had underwent neoadjuvant treatment before surgery.

Post operative ventilator support was required in 2 patients, of whom one was extubated on the same day of surgery while the other was extubated on the second postoperative day.



Proximal gastrectomy was performed in 3 patients totally- 1 patient with leiomyoma ,one patient with GIST and one patient with siewert type 2 adenocarcinoma underwent proximal gastrectomy+ distal esophagectomy .

Total gastrectomy was done in 29patients overall, of whom one patient underwent metastatectomy of a solitary metastasis in the leftlobe of liver along with total gastrectomy while the other had distal pancreatectomy +splenectomy for locally advanced siewert 3 adenocarcinoma.

All the patients with a histologic diagnosis of squamous cell carcinoma , basiloid squamous cell carcinoma and siewert type 1 adenocarcinoma were subjected to Transhiatal esophagectomy totaling to 13 in number.

Histopathology	**THE**
Squamous cell carcinoma	7
Adenocarcinoma- siewert type-1	5
Basiloid squamous cell carcinoma	1
Total	13

Of the 13 patients who underwent THE, a completely handsewn anastomosis was done in 5 (38.4%)patients, while a stapler was used in the remaining 8(62.6%). In the stapled anastomosis, 5 of 8 had partial posterior stapling with linear cutter and anterior handsewn , while 3 of 8 stapled patients had a circular stapled esophagogastric anastomosis. The posterior stapling technique(side to side stapling using linear cutter) is

believed to provide a wide anastomosis thereby decreasing the possibility of stricture formation even in case a leak occurs.

Neck leak occurred in two patients patients which settled with drainage and nutritious feeding through the feeding jejunostomy tube in one patients while the other patient died due to aspiration pneumonia . In the 2 patients who had neck leak, the esophagogastric conduit anastomosis was done by a completely handsewn technique in one patient and by a stapled technique in other patient.

R0 resection was achieved in all patients except one who had R1 resection. This patient had a siewert type 2 adeno carcinoma.

Overall 33 patients were found to have distant metastasis. Staging laparoscopy done in all patients with adenocarcinomas helped in identifying metastatic disease like peritoneal deposits, omental deposits or small surface liver nodule .In 33(40.7%) patients a staging laparoscopy helped in avoiding a laparotomy and were referred to palliative chemoradiotherapy .Patients with impending obstruction were referred for stenting.

3 patients were referred for surgical treatment following absence of response to Neoadjuvant treatment. Of these 2 had undergone chemotherapy and one patient underwent chemoradiotherapy. All the 3

patients were inoperable on trial dissection and had only a feeding jejunostomy done.

Following total gastrectomy, in 8 (27.6%)patients the esophagojejunal anastomosis was done by a hand sewn technique while in 21 (72.4%)patients it was done using SDH 25 circular stapler.

Two patients had esophagojejunal anastomotic leak following total gastrectomy .Among these two leaks, 1 was hand sewn anastomosis while the other was a stapled anastomosis. One of the above patients had esophagojejunal anastomotic stenting while the other patient had coronary artery disease and underwent percutaneous image guided drainage .

All the patients who had resectional surgery underwent adjuvant chemotherapy excluding those who succumbed postoperatively. Patients who had a leak or were poorly nourished were advised to attend chemotherapy schedule after healing of the leak or after two weeks.

Staplers

Staplers were used in 40 out of 45 patients who underwent resectional surgery.

Only in 5 patients who had THE and reconstruction by a completely handsewn technique was the stapler not used. Even in those patients who underwent reconstruction of esophagojejunal anastomosis by a handsewn technique, the duodenum was secured and divided with a stapler.

Stricture occurred in one patient following a neck leak. The esophagogastric conduit anastomotic stricture was relieved by dilatation.

During the follow up period of 31 months , 37 patients who underwent resectional surgery were alive .Out of the above ,1 patient had recurrence in the gastric conduit detected by endoscopy.8 patients were lost to follow up.

Blood transfusion

Overall 23 (28.4%)patients required blood transfusion in the study group of 81 patients. Of the 45 patients who underwent resectional surgery, 7(15.5%) patients required blood transfusion. In these patients post operatively transfusion was done to maintain a haemoglobin of 10g%

Mortality

Two patients in the study group died postoperatively. This accounts for a mortality of 2.4% of all patients and 4.4% when the denominator was the number of patients who underwent resectional surgery. One of these patients had undergone a total gastrectomy while the other one underwent a transhiatal esophagectomy. Both the patients had coronary artery disease.

DISCUSSION

In the study group, males were more more commonly affected than females accounting for 63% of cases. 56.8% had association with cigarette smoking and 43.2% had association with alcohol abuse while tobacco chewing was associated with 34.5% of patients. History of heart burn was present in 49%.

Adenocarcinoma was the most common histologic type found in 85.2% followed by squamous cell carcinoma in 8.6%.Three patients had gastro intestinal stromal tumor while 1had leiomyoma.

This shows that there is a rise in the incidence of adenocarcinoma around gastroesophageal junction in the geographical location of the study i.e South India similar to that observed in the western population.

Dysphagia was the most common symptom present in 79%. Loss of weight was present in 74% of patients while loss of appetite was present in72.8%.Co-morbidities were present in around 15% of patients.

Most of the patients presented in the advanced stage of disease i.e either stage 3 or 4. A little more than half of the patients were operable. Staging laparoscopy helped in avoiding nontherapeutic laparotomies in

40.7% of cases while it did not avoid laparotomy in three patients who underwemt trail dissection..

Total gastrectomy was the most common resectional surgery done (in 64.4% of resectional surgery) followed by Trans hiatal esophagectomy(28.8%). Blood transfusion was required in 7(15.5%) of patients who underwent resectional surgery. Wound infection occurred in 13.5% of cases while 7.4% of cases had respiratory complications.

Anastomotic leak

Totally 4(8.8%) patients out of the 45 patients who underwent resectional surgery had anastomotic leak . 2 patients out of the 13 patients who underwent THE had a neck leak of which one patient recovered with conservative management while the other patient died due to coronary disease. 2 of the 29 patients who underwent total gastrectomy had leak .Leak in the neck was associated with less morbidity and mortality compared to intra abdominal leak.

Among the patients who had leak the mean Hb was 8.3g% compared to the overall mean of 9g%.The mean albumin values in patients who had leak was 3.18g% compared to the overall mean of 3.27g%.

Stapler was used in 88% of resectional surgery i.e. at least in the closure of duodenal stump. Its use is especially handy in case of anastomosis done in deep seated locations like in the region around the esophageal hiatus of the diaphragm especially in siewert type 1 tumors. A stapler was used for the vital anastomosis in 32(71.1%) patients out of the 45 patients who underwent resectional surgery. When applied optimally , staplers help in standardization of the procedure especially in an institution where there are many operating surgeons.

CONCLUSION

GE junction cancers represent an emerging health problem.

The incidence of adenocarcinoma in this part of the world is on the rise similar to the west probably due to changing life styles and adaptation of western culture. The AJCC 7th edition staging manual for esophageal carcinoma includes the gastroesophageal junction and harmonizes the esophageal and gastric cancer staging system .

Surgical resection for cure remains the mainstay of treatment at present. Tailoring the surgical approach in accordance with the histological type , and siewert type gives the optimal outcome to the patient.

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APPENDIX

Case record form:

Name
Age
Sex
IP no.-Inpatient number
Diagnosis- Ca.GE jun/GIST
Siewert type-1/2/3
Leiomyoma-leiomyoma
Histological type-adeno ca./scc
Procedure- THE/TG/FJ
Grade of differentiation-G1/G2/G3
GROSS MORPHOLOGY1-protruding/
2- ulcerative, / 3-infiltrative

Stage-stage of the tumor as per 7th edition of AJCC
Preop.Rx- preoperative treatment

CT- chemotherapy
CRT- chemoradio therapy
Pain abd.- Present-1 /Absent-2

Dysphagia- Present-1 , Absent-2

Heart burn- Present-1 , Absent-2
Hemetemesis- Present-1 , Absent-2
Malena- Present-1 , Absent-2
LOW-loss of weight- Present-1 , Absent-2
LOA-loss of appetite- Present-1 , Absent-2
HTN-Present-1 , Absent-2
DM- Present-1 , Absent-2
CAD- Present-1 , Absent-2
COPD-Present-1 , Absent-2
Alcohol- Present-1 , Absent-2
Tobacco chewing- Present-1 , Absent-2
Non veg-Non vegetarian- Yes-1, No-2
Hb%-Haemoglobin in gram%
Alb-Albuminin in gm/dl
Duration(min)-Duration of surgery in minutes
Blood loss(ml)- blood loss in millilitres
Blood tr.-blood transfusion- Present-1 , Absent-2
Stapled/handsewn-stapled-1, hand sewn-2
SDH-25/TLC- SDH25-circular stapler-1
TLC-linear cutter -2
Ro/R1-resection margin Ro-1
R1-2
Anast.leak-Anastomotic leak - Present-1 , Absent-2
Stricture- Present-1 , Absent-2
RT removal- Day of ryle's tube removal
ICD-intercoastal chest drain inserted-
Yes-1, No-2
DT removal- day of Drainage Tube removal
Oral intake-day of oral intake
Dilatation-Yes-1, No-2
Post.op.ventilatio-Post operative ventilator support-Yes-1 ,No-2
Extubation da-Day of extubation
Wound in.-wound infection- Yes-1, No-2
Resp.inf.-Respiratory complications-
Yes-1, No-2
Post.op.stay-duration of post operative stay in days
Mortality- Yes-1, No-2
Chemotherapy-Yes-1, No-2

INFORMED CONSENT FORM – ENGLISH

Title of the study – "AUDIT OF GASTROESOPHAGEAL JUNCTION TUMORS"

Name of the participant: _____

Name of the Principal/Co-Investigator: Dr.SREEKANTH.D

Name of the Institution: MADRAS MEDICAL COLLEGE AND RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL

Name and address of the sponsor / agency (ies), if any: Nil

I,_____(name of participant), have read the information in this form (or it has been read to me).

I was free to ask any questions and they have been answered. I am over 18 years of age and, exercising my free power of choice, hereby give my consent to be included as a participant in **"AUDIT OF GASTROESOPHAGEAL JUNCTION TUMORS"**

I have read and understood this consent form and the information provided to me.

1. I have had the consent document explained to me.
2. I have been explained about the nature of the study.
3. I have been explained about my rights and responsibilities by the investigator.

4. I have informed the investigator of all the treatments I am taking or have taken in the past _____ months including any native (alternative) treatments.
5. I hereby give permission to the investigators to release the information obtained from me as result of participation in this study to the sponsors, regulatory authorities, Government agencies, and ethics committee. I understand that they may inspect my original records.
6. I understand that my identity will be kept confidential if my data are publicly presented.
7. I have had my questions answered to my satisfaction.
8. I consent voluntarily to participate as a participant in this research study.

I am aware, that if I have any questions during this study, I should contact the investigators. By signing this consent from, I attest that the information given in this document has been clearly explained to me and understood by me. I will be given a copy of this consent document.

Name and signature / thumb impression of the participant:

(Name) _____(Signature)_____

Date:

Name and signature of the Investigator:

(Name) _____(Signature)_____

Date:

ஆராய்ச்சி தகவல் தாள்

உணவுக்குழாய் மற்றும் இரப்பை இணைப்பு பகுதி கட்டிகள் (GASTRO ESOPHAGEAL JUNCTION TUMORS) உள்ள நோயாளிகள் பற்றிய ஆய்வு

பங்கேற்பாளர் பெயர் :

ஆராய்சியாளர் பெயர் :

சென்னை இராஜீவ்காந்தி அரசு பொது மருத்துவனையில் அனுமதி பெரும் உணவுக்குழாய் மற்றும் இரப்பை இணைப்பு பகுதி கட்டிகள் (Gastro Esophageal Junction Tumors) உள்ள நோயாளிகள் பற்றிய ஆராய்ச்சி இங்கு நடைபெற்று வருகின்றது.

இந்த கட்டியினால் உணவுக்குழாயில் அடைப்பு ஏற்பட்டு, விழுங்குவதில் கஷ்டம் ஏற்படுகிறது. மேலும் இந்த கட்டி புற்றுநோயாக இருந்தால் அறுவைசிகிச்சை செய்து அகற்றவேண்டும். கட்டியை அகற்ற வயிற்றின் வழியாகவோ, மார்பின் வழியாகவோ அல்லது கழுத்தின் வழியாகவோ அறுவை சிகிச்சை செய்யப்படும். கட்டி குடலில் மற்ற பகுதிகளுக்கு பரவியிருந்தால் கட்டியை எடுக்காமல், சிறுகுடலில் ஆகாரம் செல்வதற்கு ஒரு சிறு டியூப் மட்டுமே வைத்து அறுவை சிகிச்சை செய்யப்படும்.

நீங்களும் ஆராய்ச்சியில் பங்கேற்க நாங்கள் விரும்புகிறோம். இந்த ஆராய்ச்சியில் உங்களுக்கு நடைபெறும் சிகிச்சை முறைகள் மற்றும் அதன் விளைவுகள் பற்றிய ஆராய்ச்சி செய்ய உள்ளோம். இதனால் உங்களது உடல்நலமோ, மனநலமோ பாதிக்கப்படாது.

முடிவுகளை அல்லது கருத்துகளை வெளியிடும்போதோ அல்லது ஆராய்ச்சியின் போதோ தங்களது பெயரையோ அல்லது அடையாளங்களையோ வெளியிடமாட்டோம் என்பதையும் தெரிவித்துக் கொள்கிறோம்.

இந்த ஆராய்ச்சியில் பங்கேற்பது தங்களுடைய விருப்பத்தின் பேரில் தான் இருக்கிறது. மேலும் நீங்கள் எந்நேரமும் இந்த ஆராய்ச்சியிலிருந்து பின்வாங்கலாம் என்பதையும் தெரிவித்துக் கொள்கிறோம்.

இந்த சிறப்பு அறுவைசிகிச்சையின் பலன்களை/ முடிவுகளை ஆராய்ச்சியின்போது அல்லது ஆராய்ச்சியின் முடிவின் போது தங்களுக்கு அறிவிப்போம் என்பதையும் தெரிவித்துக் கொள்கிறோம்.

ஆராய்ச்சியாளர் கையொப்பம்

தேதி:

பங்கேற்பாளர் கையொப்பம்

தேதி:

ஆராய்ச்சி ஒப்புதல் கடிதம்

உணவுக்குழாய் மற்றும் இரப்பை இணைப்பு பகுதி கட்டிகள் (GASTRO ESOPHAGEAL JUNCTION TUMORS) உள்ள நோயாளிகள் பற்றிய ஆராய்ச்சி

பெயர்	:	தேதி	:
வயது	:	உள் / புற நோயாளி எண்	:
பால்	:	ஆராய்ச்சி சேர்க்கை எண்	:

என்னுடைய சுய நினைவுடனும் மற்றும் முழு சுதந்திரத்துடன் இந்த மருத்துவ ஆராய்ச்சியில் சேர்த்துக்கொள்ள ஒப்புதல் அளிக்கிறேன்.

கீழ்காணப்படும் நிபந்தனைகளுக்கு நான் ஒப்புதல் அளிக்கிறேன்.

இந்த ஆராய்ச்சியின் நோக்கமும், சிகிச்சை முறைகளும் எனக்கு திருப்தியளிக்கும் வகையில் அறிவுறுத்தப்பட்டது.

உணவுக்குழாய் மற்றும் இரப்பை இணைப்பு பகுதி கட்டியினால் (Gastro Esophageal Junction Tumors) ஏற்படும் அறிகுறிகள், எனக்கு மேற்கொள்ளப்படும் சிகிச்சை முறைகள், அதனால் ஏற்படும் பின்விளைவுகள் அனைத்தையும் நான் அறிவேன்.

என் உடல்நலம் பாதிக்கப்பட்டாலோ அல்லது எதிர்பாராத வழக்கத்திற்கு மாறான நோய்க்குறி தென்பட்டாலோ அதனை உடனடியாக மருத்துவரிடம் தெரிவிக்க சம்மதிக்கிறேன்.

என் மருத்துவ குறிப்பேடுகளை இந்த ஆராய்ச்சியில் பயன்படுத்திக்கொள்ள சம்மதிக்கிறேன். இந்த ஆராய்ச்சி மையமும், ஆராய்ச்சியாளரும் என்னுடைய விவரங்கள் அனைத்தையும் இரகசியமாக வைப்பதாக அறிகிறேன்.

.....	.....	.....
நோயாளியின் பெயர்	கையொப்பம்	தேதி
.....	.....	.....
ஆராய்ச்சியாளரின் பெயர்	கையொப்பம்	தேதி

MASTER CHART GUIDE

NA-Not Applicable

Name-Name of the patient

Age

Sex

IP no.-Inpatient number

Diagnosis- Ca.GE jun.-Carcinoma gastroesophageal junction

GIST-Gastrointestinal stromal tumor

Siewert-1/siewert-2/siewert-3-type of adeno carcinoma

Leiomyoma-leiomyoma

Histological type-adeno ca.-Adeno carcinoma

Scc-squamous cell carcinoma

Procedure-

TG- total gastrectomy

THE- trans haital esophagectomy

FJ -feeding jejunostomy

Grade of differentiation

1- Well differentiated

2- Moderately differentiated

3- Poorly differentiated

GROSS MORPHOLOGY

1-protruding

2- ulcerative

3-infiltrative

Stage-stage of the tumor as per 7th edition of AJCC

Preop.Rx- preoperative treatment

CT- chemotherapy

CRT- chemoradio therapy

Pain abd.-Pain abdomen- Present-1 , Absent-2

Dysphagia- Present-1 , Absent-2

Heart burn- Present-1 , Absent-2

Hemetemesis- Present-1 , Absent-2

Malena- Present-1 , Absent-2

LOW-loss of weight- Present-1 , Absent-2

LOA-loss of appetite- Present-1 , Absent-2

HTN-hypertension- Present-1 , Absent-2

DM-Diabetes mellitus- Present-1 , Absent-2

CAD-coronary artery disease- Present-1 , Absent-2

COPD-chronic obstructive pulmonary disease- Present-1 , Absent-2

Alcohol- Present-1 , Absent-2

Tobacco che-Tobacco chewing- Present-1 , Absent-2

Non veg-Non vegetarian- Yes-1, No-2

Hb%-Haemoglobin in gram%

Alb-Albumin in gm/dl

Duration(min)-Duration of surgery in minutes

Blood loss(ml)- blood loss in millilitres

Blood tr.-blood transfusion- Present-1 , Absent-2

Stapled/handsewn-stapled-1, hand sewn-2

SDH-25/TLC- SDH25-circular stapler-1

TLC-linear cutter -2

Ro/R1-resection margin Ro-1

R1-2

Anast.leak-Anastomotic leak - Present-1 , Absent-2

Stricture- Present-1 , Absent-2

RT removal- Day of ryle's tube removal

ICD-intercoastal chest drain inserted-Yes-1, No-2

DT removal- day of Drainage Tube removal

Oral intake-day of oral intake

Dilatation-Yes-1, No-2

Post.op.ventilatio-Post operative ventilator support-Yes-1 ,No-2

Extubation da-Day of extubation

Wound in.-wound infection- Yes-1, No-2

Resp.inf.-Respiratory complications-Yes-1, No-2

Post.op.stay-duration of post operative stay in days

Mortality- Yes-1, No-2

Chemotherapy-Yes-1, No-2

Name	Age	sex	IP no.	Diagnosis	histologic type	Procedure	Grade of diff.	Gross morphology	stage	pre-op. Rx	Pain-abd.	Dyspha	heart burn	Hemeteme sis	Mal-ena	LOW	LOA	HTN	DM	CAD	CO-PD	Alcohol	smo-king	Tobacco chewing	Nonveg.	Hb%	Alb.	duration(min)	blood-loss(ml)	blood tr.	stapled/hand sewn	SDH-25/TLC	R 0/R1	anast.leak	stricture	RT removal	ICD	DT-removal	oral intake	dilatation	post op. ventilation	ext ubation-day	wound infection	Resp. inf.	post op.stay	mortality	Chemotherapy
Ambika	25	f	55908	siewert-2	adeno ca.	TG	1	1	3	NA	2	1	1	2	2	1	1	2	2	2	2	2	2	2	2	9.3	3.2	240	250	2	2	NA	1	2	2	8	2	7	7	2	2	0	2	1	9	2	1
Sivalingam	65	m	61782	Ca.GE jun	scc	THE	1	1	3	NA	2	1	2	2	2	2	2	2	2	2	2	1	1	1	1	8.2	3.5	300	300	2	2	NA	1	2	1	12	1	5	8	1	2	0	1	2	14	2	1
Baskar	30	m	59651	siewert-2	adeno ca.	stag.la	2	3	4	NA	1	1	1	2	2	1	1	2	2	2	2	2	2	2	1	7	3	60	10	1	NA	NA	NA	NA	NA	NA	2	NA	NA	2	2	0	2	2	5	2	1
Moorthy	50	m	74479	siewert-1	adeno ca.	THE	2	3	3	NA	2	1	1	1	1	2	2	2	2	2	1	1	2	2	8.8	2.9	300	170	2	2	NA	1	2	2	9	1	8	12	2	1	2	1	1	22	2	1
Thirunavukarasu	64	m	71030	siewert-3	adeno ca.	stag.la	3	3	4	NA	2	1	2	2	2	1	1	2	2	2	1	1	1	1	1	9.2	3	45	10	1	NA	NA	NA	NA	NA	NA	2	NA	NA	2	2	0	2	1	8	2	1
Anusurya	65	f	81683	siewert-3	adeno ca.	TG	2	2	3	NA	2	1	1	2	2	2	2	1	2	2	2	2	2	1	1	8.4	3.6	260	190	2	2	NA	1	2	2	8	1	8	9	2	2	0	2	2	11	2	1
Ravichandran	45	m	86607	siewert-3	adeno ca.	TG	1	3	3	NA	1	1	2	2	2	1	1	2	2	2	2	1	1	2	1	9.6	3.3	220	100	2	1	1	1	2	2	8	2	7	6	2	2	0	2	2	9	2	1
Sundaramoorthy	38	m	94511	Ca.GE jun	scc	THE	2	2	3	NA	2	1	2	2	2	1	1	2	2	2	2	2	1	2	1	9.8	3.3	250	150	2	1	1	1	2	2	7	1	4	6	2	2	0	2	2	9	2	1
Vanitha	49	f	65638	siewert-2	adeno ca.	TG	1	2	3	NA	2	1	1	1	1	2	1	2	2	2	2	2	2	1	1	8.8	2.9	180	200	2	1	1	2	2	2	7	2	8	7	2	2	0	2	2	13	2	1
Nagalakshmi	48	f	91306	siewert-3	adeno ca.	stag.la	3	3	4	NA	2	1	1	2	2	1	2	2	2	2	2	2	2	1	1	7.8	3.1	70	50	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	6	2	1
Ponnusamy	58	m	95570	siewert-3	adeno ca.	TG	2	2	3	NA	2	1	2	2	2	1	1	2	2	2	1	1	1	1	1	9.5	3.2	280	250	2	1	1	1	2	2	7	2	7	6	2	2	0	2	2	10	2	1
Ramesh kumar	54	m	473	siewert-2	adeno ca.	stagin	2	3	4	NA	1	2	1	2	2	1	2	2	2	2	1	2	1	2	1	7.2	3	40	5	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	6	2	1
perumal	60	m	107065	siewert-3	adeno ca.	TG	2	1	3	NA	2	1	1	2	2	1	1	2	2	2	1	1	1	1	1	8.6	3.1	290	180	2	1	1	1	2	2	7	2	7	7	2	2	0	2	2	10	2	1
Arunachalam	37	m	103739	siewert-1	adeno ca.	THE	2	1	3	NA	2	1	1	2	2	2	2	2	2	2	1	2	1	1	1	9.2	3.5	300	200	2	1	2	1	2	2	9	1	7	10	2	2	0	2	2	15	2	1
Shenaz begum	57	f	5225	siewert-2	adeno ca.	stag.la	3	2	4	NA	2	1	2	2	2	1	1	2	2	2	2	2	2	1	1	9.6	3.2	60	10	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	7	2	1
sulochana	56	f	6904	siewert-2	adeno ca.	stagin	3	3	4	NA	1	2	1	2	2	1	1	2	2	2	2	2	1	1	1	8.8	3.1	50	15	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
moorthy	50	m	9869	siewert-3	adeno ca.	stag.l	2	3	4	NA	1	1	2	2	2	1	2	2	2	2	1	1	1	2	1	8.6	3.5	45	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	7	2	1
Komala	65	f	18982	siewert-2	adeno ca.	stag.la	3	3	4	NA	2	1	1	2	2	1	1	2	2	2	2	2	2	1	1	7.5	3.2	55	15	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	7	2	1
kodandaraman	58	m	16373	siewert-2	adeno ca.	stag.la	3	3	4	NA	1	1	1	2	2	1	2	2	2	2	1	2	1	2	1	7.8	3.2	60	10	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	1	1	7	2	1
Natarajan	77	m	25837	siewert-2	adeno ca.	stagin	2	3	4	NA	1	2	1	2	2	1	1	2	2	2	1	1	1	1	1	8.8	3.1	50	5	1	NA	NA	1	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Malliga	26	f	23336	siewert-2	adeno ca.	TG	1	2	3	NA	2	1	1	1	1	2	2	2	2	2	2	2	2	1	1	9	3.1	200	180	1	2	NA	1	2	2	10	2	11	10	2	2	0	2	2	14	2	1
Shahul hameed	62	m	69780	siewert-2	adeno ca.	stagin	2	2	4	NA	1	2	1	2	2	1	1	2	2	2	1	1	1	1	1	8.9	3.3	45	5	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Ramalakshmaiah	66	m	71572	siewert-3	adeno ca.	stag.la	3	2	4	NA	2	1	2	2	2	1	1	2	2	2	1	1	1	2	1	7.2	3		10	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	1	8	2	1
Mariammal	40	f	70477	siewert-3	adeno ca.	TG	3	2	3	NA	1	1	2	2	1	1	2	2	2	2	2	2	1	1	1	9	3.1	160	110	1	1	1	1	2	2	6	2	7	6	2	2	0	2	2	9	2	1
Chandran	64	m	76915	siewert-2	adeno ca.	stagin	2	2	4	NA	1	2	1	2	2	1	1	2	2	2	2	1	1	1	1	10.6	3.3	50	5	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Vijaya kumar	57	m	96666	siewert-2	adeno ca.	stag.la	3	1	4	NA	2	1	1	2	2	1	1	2	2	2	1	1	1	2	1	9.1	3.2	60	20	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	7	2	1
Dhanalakshmi	45	f	97664	siewert-3	adeno ca.	TG	2	2	3	NA	2	1	2	2	2	2	2	2	2	2	1	1	1	1	1	8.3	3.1	290	180	2	1	1	1	2	2	7	2	7	6	2	2	0	2	2	10	2	1
Karthik	29	m	101210	siewert-2	adeno ca.	stag.la	2	1	4	NA	1	1	1	2	2	1	1	2	2	2	2	2	2	1	1	9.8	3.4	45	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	6	2	1
Immanuel	60	m	102396	siewert-2	adeno ca.	TG	1	2	3	NA	2	1	1	1	1	1	2	2	2	2	2	1	1	1	1	7	2.9	190	200	1	1	1	1	2	2	18	2	22	20	2	2	0	2	2	24	2	1
Srinivasan	50	m	100572	siewert-2	adeno ca.	stag.la	2	1	4	NA	2	1	2	2	2	2	1	2	2	2	2	1	1	1	1	9.8	3.5	50	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Rajkumar	61	m	25154	siewert-2	adeno ca.	stag.la	3	1	4	NA	2	1	1	2	1	1	2	1	8	2	1	1	1	1	1	10.4	3.6	60	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Manohari	34	f	39710	siewert-2	adeno ca.	stagin	3	3	4	NA	1	2	1	2	2	2	1	2	2	2	2	2	2	2	2	11.2	3.5	60	5	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	4	2	1
Selvaraj	52	m	46352	siewert-3	adeno ca.	stag.la	2	2	4	NA	2	1	2	2	2	1	1	2	2	2	1	1	1	1	1	9.3	3.3	90	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Chakravarthy	54	m	43527	siewert-2	adeno ca.	proxim	2	1	3	NA	2	1	1	2	2	1	1	2	1	2	2	1	1	1	1	9	3.1	160	110	2	1	1	1	2	2	6	2	7	6	2	2	0	2	2	10	2	1
Masilamani	65	m	47514	siewert-2	adeno ca.	stag.la	3	1	4	NA	2	1	2	2	2	2	2	2	2	1	1	1	1	1	1	9.6	3.1	90	20	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Muruganandam	30	m	56597	siewert-1	adeno ca.	THE	1	1	3	NA	1	1	1	2	2	2	1	2	2	2	2	1	1	1	1	9.2	3	300	280	2	2	NA	1	1	2	9	2	6	10	2	2	0	1	2	14	2	1
Muniratnam	55	m	99752	siewert-1	adeno ca.	THE	1	1	3	NA	2	1	1	2	2	1	1	2	2	2	2	1	1	2	1	8.8	3.2	310	250	2	1	2	1	2	2	8	2	6	8	2	2	0	2	2	11	2	1
Munibabu	56	m	72131	Ca.GE jun	scc	THE	1	2	3	NA	2	1	2	2	2	2	2	2	2	2	2	1	1	1	1	9.5	3.2	290	120	2	1	1	1	2	2	7	2	5	8	2	2	0	2	2	10	2	1
Poongavanam	39	f	61365	siewert-3	adeno ca.	TG	2	1	3	NA	11	1	2	2	2	1	1	2	2	2	2	2	2	1	1	9	3.7	160	120	2	1	1	1	2	2	6	2	7	6	2	2	0	2	2	9	2	1
Sundar	57	m	76941	siewert-2	adeno ca.	stagin	3	3	4	NA	1	2	1	2	2	1	1	2	2	2	2	1	1	2	1	10.3	3.5	60	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Kuppan	58	m	82666	siewert-3	adeno ca.	stagin	3	2	3	NA	1	2	2	2	2	1	2	2	2	2	1	2	2	1	1	8.8	3.1	60	5	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	6	2	1
Ragavan	55	m	81781	siewert-3	adeno ca.	stagin	2	3	4	NA	1	2	2	2	2	2	1	1	1	2	2	1	1	2	1	9.4	3.3	70	10	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	6	2	1
Saroja	70	f	95748	siewert-3	adeno ca.	stagin	3	1	4	NA	1	2	2	2	2	1	2	2	2	2	2	2	2	1	1	8.1	3	60	5	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	1	9	2	1
Chinnapparaj	70	m	90366	siewert-3	adeno ca.	TG+DI	2	1	3	NA	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	9.2	3.3	350	500	2	1	1	1	2	2	8	1	13	11	2	2	0	2	2	16	2	1
Kaliyaperumal	70	m	99538	Ca.GE jun	scc	THE	1	1	3	NA	2	1	2	2	2	2	2	2	2	2	1	2	1	1	1	9.6	3.2	300	150	2	2	NA	1	2	2	8	1	6	7	2	2	0	2	2	14	2	1
Gnanamoorthy	65	m	101518	siewert-2	adeno ca.	FJ	2	2	3	CT	2	1	1	2	2	1	1	2	2	2	2	1	1	2	1	8.2	2.8	60	20	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	1	8	2	1
Iqbal	58	m	101643	siewert-2	adeno ca.	FJ	3	1	3	CRT	2	1	1	2	2	1	1	2	2	2	2	1	1	2	1	9.6	3.5	50	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	6	2	1

selvi	36	f	76516	siewert-3	adeno ca.	stagin	3	2	4	NA	1	2	2	2	2	1	1	2	1	2	2	2	2	2	1	9.4	3.3	70	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Jayalakshmi	55	f	56649	siewert-3	adeno ca.	FJ	2	1	3	CT	1	2	2	2	2	1	1	2	2	2	2	2	2	2	1	9.2	3.5	65	5	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	6	2	1
shanti	38	f	46273	siewert-2	adeno ca.	stagin	3	3	4	NA	1	2	1	2	2	1	1	2	2	2	2	2	2	2	1	10.4	3.2	80	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	6	2	1
marimuthu	38	m	52328	siewert-3	adeno ca.	TG	1	1	3	NA	1	1	2	2	2	1	2	2	2	2	2	2	2	2	1	8	3.1	200	180	2	2	NA	1	2	2	10	2	11	10	2	2	0	2	2	14	2	1
karnan	70	m	73234	siewert-3	adeno ca.	TG	1	1	3	NA	2	1	2	2	1	1	1	1	2	2	2	2	2	2	1	8	3.1	220	200	2	2	NA	1	2	2	10	2	11	10	2	2	0	2	2	14	2	1
venkatesan	66	m	54976	siewert-2	adeno ca.	TG	2	2	3	NA	1	1	1	2	1	2	2	2	2	2	2	1	1	1	1	7	3.1	200	180	1	2	NA	1	2	2	10	2	11	10	2	2	0	2	2	14	2	1
poornima	20	f	93947	leiomyoma	leiomyoma	prox.	NA	NA	3	NA	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	12.6	4.2	180	200	2	1	1	2	2	2	7	2	8	7	2	2	0	2	2	10	2	2
arumugam	50	m	63829	GIST	GIST(retro+	TG	NA	NA	3	NA	2	1	2	2	2	1	1	2	2	2	2	1	1	2	1	9.1	3.6	300	200	2	1	1	1	2	2	7	2	7	8	2	2	0	2	2	14	2	1
Madhivanan	43	m	102172	GIST	GIST	prox.g	NA	NA	3	NA	2	1	2	2	2	1	1	2	2	2	2	1	1	2	1	9.8	3.3	280	160	2	1	1	1	2	2	6	2	7	6	2	2	0	2	2	9	2	1
sampath	63	m	72951	GIST	GIST	TG+m	NA	NA	4	NA	1	1	2	2	2	1	1	2	2	2	2	2	1	2	1	8.3	3.1	410	520	1	1	1	1	2	2	7	2	7	6	2	2	0	1	2	14	2	1
Ruturamary	60	f	12432	ca.GE jun	scc	THE	1	1	3	NA	2	1	2	2	2	1	1	1	2	2	2	2	2	2	1	10.8	3.3	310	250	2	1	1	1	2	2	7	1	8	7	2	2	0	2	2	11	2	1
chellam.K	50	f	66968	siewert-1	adeno ca.	THE	2	1	3	NA	2	1	1	2	2	1	2	1	1	2	2	2	2	1	1	8.8	3.2	300	280	2	1	1	1	2	2	7	1	7	9	2	1	0	2	2	10	2	1
Thillaiammal	57	f	8549	ca. GE jun.	scc	THE	1	1	3	NA	2	1	2	2	2	2	1	2	2	2	2	2	2	1	1	9.8	3.6	300	180	2	1	2	1	2	2	7	1	3	8	2	2	0	2	2	10	2	1
Nagammal	60	f	18235	ca. GE jun.	scc	THE	2	2	3	NA	2	1	2	2	2	2	1	2	2	2	2	2	2	1	1	8.4	3.4	270	200	2	1	2	1	2	2	12	1	6	10	2	2	0	2	2	14	2	1
vasantha	50	f	55973	siewert-3	adeno ca.	TG	2	1	3	NA	2	1	2	2	2	1	1	1	2	2	2	2	2	2	1	9.5	3.2	180	200	2	1	1	1	2	2	6	2	7	6	2	2	0	2	2	13	2	1
jagadhambal	62	f	81653	siewert-3	adeno ca.	TG	1	1	3	NA	1	1	2	2	2	1	1	1	1	2	2	2	2	1	1	7	3	180	200	1	1	1	2	1	2	22	1	22	22	2	2	0	1	1	22	2	1
baskar	57	m	85798	siewert-3	adeno ca.	TG	1	2	3	NA	1	1	1	1	1	1	2	2	1	2	2	1	1	2	1	6	2.5	180	200	1	1	1	1	2	2	6	2	7	6	2	2	0	2	2	9	2	1
gnanasekar	41	m	8302/11	siewert-3	adeno ca.	stag.la	3	3	4	NA	2	1	1	2	2	1	1	2	2	2	2	1	1	2	1	9.8	3.5	100	60	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	7	2	1
gajendran	50	m	104882	siewert-3	adeno ca.	TG	2	1	3	NA	2	1	2	2	2	1	1	2	2	2	2	1	1	2	1	8.8	3.2	280	350	2	1	1	1	2	2	7	2	7	6	2	2	0	2	2	10	2	1
Amsa	40	f	14339	siewert-3	adeno ca.	TG	2	1	3	NA	2	1	1	1	1	2	1	2	2	2	2	2	2	2	1	7.9	3.4	160	180	2	1	1	1	2	2	7	2	8	7	2	2	0	2	2	10	2	1
Radhakrishnan	64	m	63373	siewert-3	adeno ca.	stagin	3	2	4	NA	1	2	2	2	2	1	1	2	2	2	1	2	1	2	1	11.2	3.5	50	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Santhamary	46	f	61915	siewert-3	adeno ca.	stag.la	2	3	4	NA	2	1	2	2	2	1	1	2	2	2	2	2	2	2	1	10.2	3.3	90	30	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	7	2	1
Mohammed khan	57	m	68018	siewert-3	adeno ca.	TG	3	1	3	NA	2	1	1	2	2	1	1	2	2	2	1	2	1	2	1	8.8	3.1	330	300	2	2	NA	1	2	2	14	1	20	22	2	2	0	1	1	28	2	1
Settu	32	m	72148	siewert-3	adeno ca.	Inope	3	3	4	NA	1	2	2	1	2	1	1	1	2	2	2	2	1	1	1	7.6	3	95	50	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	7	2	1
Elumalai	64	m	78652	siewert-3	adeno ca.	TG	2	2	3	NA	2	1	1	2	2	1	1	2	2	2	2	1	1	2	1	9.5	3.5	280	230	2	1	1	1	2	2	7	2	7	6	2	2	0	2	2	9	2	1
Gopal	55	m	112589	siewert-3	adeno ca.	stag.la	3	1	4	NA	1	1	2	2	2	1	1	2	2	2	2	1	1	2	1	9.2	3.3	80	10	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	5	2	1
Vedapuri	50	m	11967	siewert-3	adeno ca.	stag.la	3	1	4	NA	1	1	2	2	2	1	1	2	2	2	2	1	1	2	1	8.8	3.2	65	15	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2	0	2	2	7	2	1
shanti	35	f	28284	siewert-3	adeno ca.	TG	1	1	3	NA	2	1	1	2	2	1	1	2	2	2	2	2	2	2	1	10.8	3.8	230	150	2	1	1	1	2	2	7	2	8	7	2	2	0	1	2	9	2	1
Maheswari	54	f	60985	siewert-3	adeno ca.	TG	1	1	3	NA	2	1	1	2	2	2	1	2	2	2	2	2	2	1	1	11.4	4.2	160	120	2	1	1	1	2	2	6	2	7	6	2	2	0	2	2	9	2	1
Ammaiappan	48	m	63923	siewert-3	adeno ca.	TG	1	1	3	NA	2	1	1	2	2	1	1	2	2	2	2	1	1	1	1	8.9	3.5	300	280	2	1	1	1	2	2	7	2	7	8	2	2	0	1	2	11	2	1
Kamatchi	60	f	82679	siewert-3	adeno ca.	TG	2	1	3	NA	1	1	2	2	2	2	1	2	2	1	2	2	2	1	1	9.2	3.3	280	200	2	2	NA	1	1	2	NA	2	8	NA	2	2	0	1	1	14	1	2
Durgadevi	34	f	87940	siewert-3	adeno ca.	TG	2	1	3	NA	2	1	1	2	2	1	1	2	2	2	2	2	2	2	1	10.2	3.4	290	220	2	1	1	1	2	2	7	2	7	8	2	2	0	1	2	10	2	1
Kuppammal	53	f	16175	ca. GE jun	basiloid sq.	THE	1	1	3	NA	1	1	2	2	2	1	1	2	2	1	2	2	2	2	1	9.5	3.2	300	350	2	2	NA	1	1	2	NA	1	NA	NA	2	2	0	1	1	7	1	2
Sundar	50	m	109306	siewert-2	adeno ca.	stagin	3	2	4	NA	1	2	1	2	2	1	1	2	2	2	1	1	1	2	1	7.8	3.6	70	10	1	NA	NA	1	NA	NA	NA	2	NA	NA	2	2	0	2	2	5	2	1

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI -3

Telephone No : 044 25305301
Fax : 044 25363970

CERTIFICATE OF APPROVAL

To

Dr.D.Sreekanth,
P.G in M.Ch Surgical Gastro Enterology,
Madras Medical College & RGGGH, Chennai -3

Dear Dr.D.Sreekanth,

The Institutional Ethics committee of Madras Medical College, reviewed and discussed your application for approval of the proposal entitled "Audit of Gastroesophageal Junction Tumors" No.20022013.

The following members of Ethics Committee were present in the meeting held on 05.02.2013 conducted at Madras Medical College, Chennai -3.

1.	Dr.SivaKumar, MS FICS FAIS	--- Chairperson
2.	Prof. R. Nandhini MD Director, Instt. of Pharmacology ,MMC, Ch-3	-- Member Secretary
3.	Prof. Shyamraj MD Director i/c , Instt. of Biochemistry , MMC, Ch-3	-- Member
4.	Prof. P. Karkuzhali. MD Prof., Instt. of Pathology, MMC, Ch-3	-- Member
5.	Prof. A. Radhakrishnan MD Prof of Internal Medicine, MMC, Ch-3	-- Member
6.	Prof. S. Deivanayagam MS Prof of Surgery, MMC, Ch-3	-- Member
7.	Thiru. S. Govindsamy. BABL	-- Lawyer
8.	Tmt. Arnold Soulina MA MSW	-- Social Scientist

We approve the proposal to be conducted in its presented form.

Sd/ Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

R Nedi 22/2/13
Member Secretary, Ethics Committee


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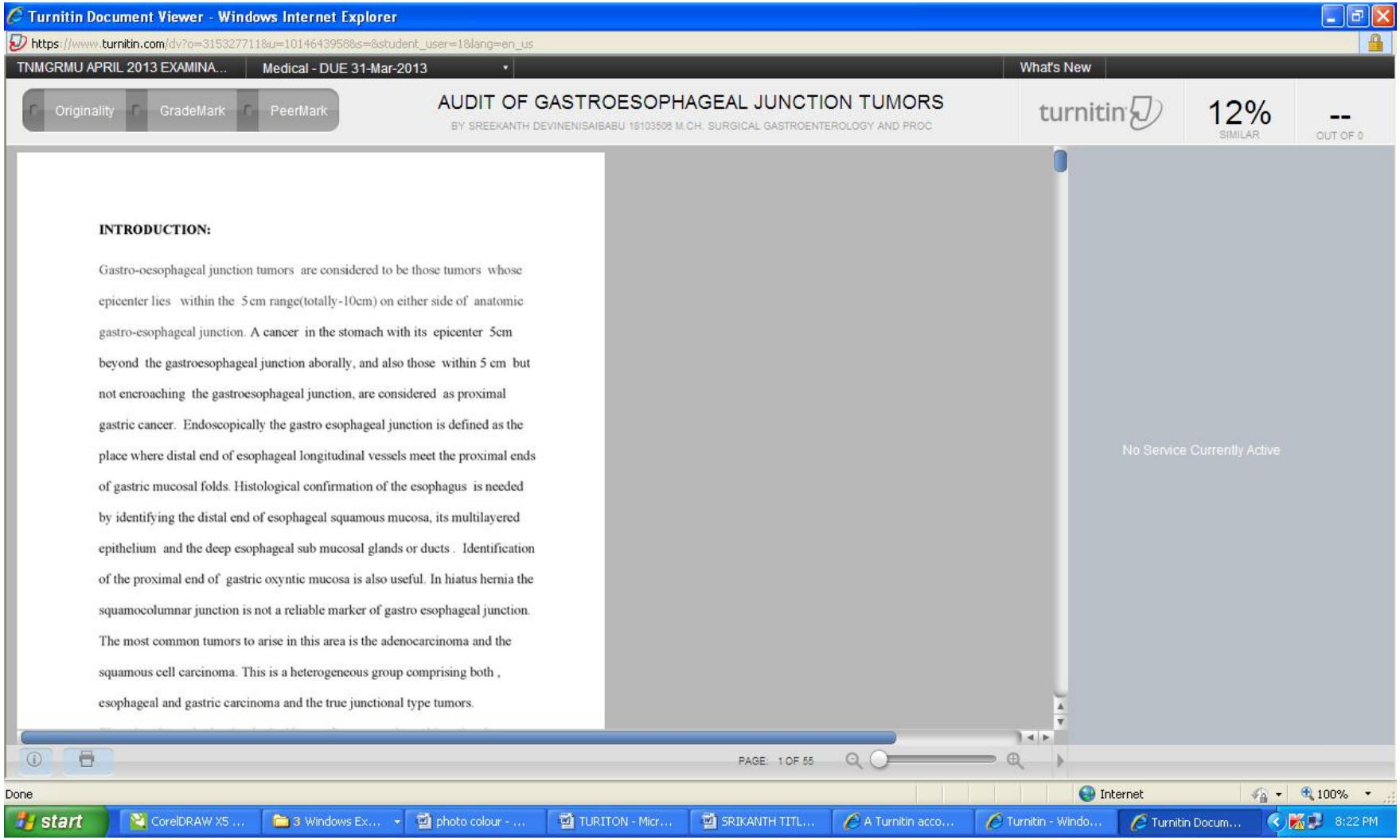
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AUDIT OF GASTROESOPHAGEAL JUNCTION TUMORS
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INTRODUCTION:
Gastro-oesophageal junction tumors are considered to be those tumors whose epicenter lies within the 5cm range(totally-10cm) on either side of anatomic gastro-esophageal junction. A cancer in the stomach with its epicenter 5cm beyond the gastroesophageal junction aborally, and also those within 5 cm but not encroaching the gastroesophageal junction, are considered as proximal gastric cancer. Endoscopically the gastro esophageal junction is defined as the place where distal end of esophageal longitudinal vessels meet the proximal ends of gastric mucosal folds. Histological confirmation of the esophagus is needed by identifying the distal end of esophageal squamous mucosa, its multilayered epithelium and the deep esophageal sub mucosal glands or ducts . Identification of the proximal end of gastric oxyntic mucosa is also useful. In hiatus hernia the squamocolumnar junction is not a reliable marker of gastro esophageal junction. The most common tumors to arise in this area is the adenocarcinoma and the squamous cell carcinoma. This is a heterogeneous group comprising both , esophageal and gastric carcinoma and the true junctional type tumors.
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